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PART IV—EDUCATION, SCIENCE, AND ART (C)

Administration Report of the Director of Medical and Sanitary Services for 1948

(*Dr. W. G. WICKREMESINGHE, O.B.E.*)

NOVEMBER, 1949

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ADMINISTRATION REPORT OF THE DIRECTOR OF MEDICAL AND SANITARY SERVICES FOR THE YEAR 1948

The Hon'ble Mr. S. W. R. D. Bandaranaike,
Minister of Health and Local Government.

SIR,

I have the honour to submit my Administration Report for the year 1948. In view of the fact that during and after the war years these reports had to be published in an abridged form it now seems desirable to incorporate in this report a brief review of the various activities during the preceding years as well. A more comprehensive account of the Department's activities has also become necessary in view of the many requests that have been received from International Organizations as well as from individual National Governments for information regarding the various phases of work of this Department. The report has been so arranged that anyone interested in any special activity of the Department may find the essential information in the relevant chapter. In consequence, this year's report is larger, and its form and contents vary to some degree from previous reports.

The most outstanding feature in regard to the health of the people is the pronounced reduction of all the mortality rates for the year. The General Death Rate, the Infant Mortality Rate and the Maternal Mortality Rate are the lowest recorded for Ceylon. While the Mortality Rates have shown a considerable reduction, the Birth Rate has increased. A high survival rate has therefore been created and the problems regarding food, housing, employment and social services, which are associated with increased populations will be intensified.

In view of the frequent criticism that the vital statistics of Eastern countries are inaccurate and therefore unreliable, it might be stated that so far as Ceylon is concerned vital statistics, which are a function of the Registrar-General, could be accepted as being on the whole accurate, where registration of births and deaths are concerned. A survey carried out in a rural area in 1931 revealed that so far as birth registration was concerned the percentage of births not notified and not registered was 4.5. It could be safely assumed that since this survey was carried out the registration has further improved. Furthermore, the vital statistics collected independently by the Medical Officers of Health of the Department correspond very closely with the figures reported by the Registrar-General.

The chief cause for the pronounced reduction in the Mortality rates can be ascribed largely to the very effective Anti-Malaria Campaign that has been carried out during the year under review. The reduction in the incidence of Malaria as reflected in hospital and dispensary figures as well as the reduction in Spleen and Parasite rates is very marked and significant.

Malaria is no longer a major problem and is also no longer a hindrance to the agricultural and industrial development of the large areas in the dry zone of the Island. The results in regard to the other communicable diseases are also very gratifying. There have been no cases of Cholera or Plague and only a few cases of Small-pox. The source of infection in all the cases of Small-pox was definitely traced to India except in one case where the source could not be established. These cases were dealt with promptly and there were no secondary cases. The occurrence of an outbreak of Poliomyelitis was the only unfortunate feature in regard to communicable diseases.

The chief draw-back to the activities of this Department was the inadequacy of trained staff, both on the curative and the health side; and in view of this, action was taken by the Department to increase the staffs by the recruitment from abroad, particularly of officers who will be helpful in strengthening the teaching side of the work of the Department. In the implementation of this policy two Sister Tutors were recruited to the Nurses' Training School with the assistance of the Rockefeller Foundation. A group of six European Religious Sisters was recruited for T.B. work at the Welisara Hospital, and arrangements were completed for the recruitment of a group of American Sisters from the Foreign Mission Sisters of St. Dominic, for work at the Kandy Hospital and Nurses' Training School. Furthermore, inquiries were set on foot with regard to the recruitment of Medical Specialists from Vienna. In addition to the strengthening of the Medical Services by the recruitment of officers from abroad, the Government Scheme for the training of local officers in specialized post-graduate work was continued. There were 60 Medical Officers in the United Kingdom, the United States of America and Canada undergoing such studies, and 24 officers were sent abroad during the year.

Another handicap that had to be contended with was the acute over-crowding of medical institutions, largely due to the increasing popularity of modern medical treatment, and also to the fact that during and after the war years building work was more or less at a standstill. During the year only one new medical institution—the Castle Street Maternity Home—was undertaken, while the other building operations were confined to the smaller institutions like Central Dispensaries and Maternity Homes, Quarters for officers and the strengthening of existing institutions such as the Children's Hospital in Colombo. As a result of the acute shortage of medical buildings the question of recruiting a special Hospital Architect for the Medical Department was considered, but this matter could not be pursued. Difficulties with regard to equipment and medical supplies have become less acute but they have not yet been solved completely.

The purchase of 12 Ambulances and 15 X'Ray plants and a supply of radium has helped to strengthen the medical services considerably.

The proper administration of the Head Office was much interfered with owing to the lack of suitable and adequate accommodation. Action is being pursued with a view to moving a portion of the staff to a building outside the Secretariat as a measure of temporary relief. This will by no means be satisfactory but is the only practical measure under the circumstances.

In the International field Ceylon was elected a member of the World Health Organization in June, 1948, and was also elected to serve on its Executive Board.

There have been some important changes in the personnel of the Department, the most important being the retirement of Dr. S. F. Chellappah, O.B.E., the Director of Medical and Sanitary Services, who had served in this capacity for seven years, and in the Department for a period of thirty years. Since leaving the Department Dr. Chellappah has accepted the post of Deputy Director of the South East Asia Regional Office of the World Health Organization, Mr. H. F. Carter, Medical Entomologist, and Mr. J. W. de Alwis, Sanitary Engineer, left in September, after serving the Department for 27 years and 20 years respectively.

During the year the Department lost the valuable services of two Grade I Medical Officers by the death of Drs. E. L. Wickremaratne and J. E. F. de Soysa.

In submitting this report to you I wish to place on record my appreciation of the loyal co-operation of all the officers of the Department and my indebtedness to the other Government Departments whose ready assistance was always accorded to me.

I am, Sir,
Your obedient servant,
W. G. WICKREMESINGHE.

Office of the Director of Medical and Sanitary Services,
Colombo, October 15, 1949.

I—ADMINISTRATION

The present day Health Services of Ceylon have evolved from a Military and Estate Medical Service and some traces of its origin might still be seen. The Civil Medical Department was established primarily for the care of the sick and the only type of Public Health work that may have received attention in the early days was the control of large scale epidemics, particularly of small-pox.

The Contagious Diseases Ordinance of 1866 which is one of earliest Public Health Ordinances lays special stress on this disease and it is noteworthy that the reports of such cases were to be made " to the Superintendent of Police, to some Inspector of Police or to some Police Constable or Headman ". It was then as much a Police function as a Public Health activity.

The Medical Department continued its activities with a single type of Medical Officer engaged primarily in the treatment of the sick and attending to any major Public Health needs of the country until 1912 when a Committee was appointed by the Governor to consider the establishment of a Sanitation Department for Ceylon. Its recommendation was given effect to in 1913 by the formation of a Sanitary Branch of the Department. Owing to the outbreak of the first world war and the limited personnel that was available the only kind of Public Health work that could be undertaken was what was termed the District type of Health work, where whole time Government Medical Officers of Health were assigned very large areas and were entrusted with the elementary type of Public Health work, comprising the sanitation of Urban and semi-urban areas and the control of outbreaks of communicable diseases.

An important development of the Public Health services which was destined in later years to mould the entire shape of the public health administration of the country was the inauguration in 1916 of the Hook-Worm Campaign with the co-operation of the Rockefeller Foundation.

This campaign which encountered considerable opposition in its early stages demonstrated effectively the economic aspects of Public Health work and the need to incorporate in the Public Health programme the then new aspect of Personal Hygiene.

This resulted in the inauguration in 1926, on an experimental basis of the Health Unit at Kalutara and subsequently of eight other Health Units located in the different Provinces of the Island.

The next important landmark in the Administration of the Health Services was the amalgamation in 1926 of the Curative and Preventive Services under the Director of Medical and Sanitary Services. We are therefore many years in advance of the Bhore Committee Report for India and of international organizations like the W.H.O., which have recommended the integration of the Curative and Preventive Services and placing them under one single head.

The inauguration of the Donoughmore Constitution in 1931, with a Minister of Health in charge of the Health Services of the Island, gave a great impetus to curative as well as preventive work. The great epidemic of Malaria of 1934-1935 demonstrated effectively the usefulness of the Health Unit type of work, which had been organised on an experimental basis; and in 1937 the then Minister of Health made a most important contribution to Public Health work by obtaining the necessary financial provision for the creation of 55 additional Health Units in the Island.

The modern Public Health movement based on the Health Unit type of work though started in 1926 in Kalutara was therefore not adopted on any large scale until 11 years later.

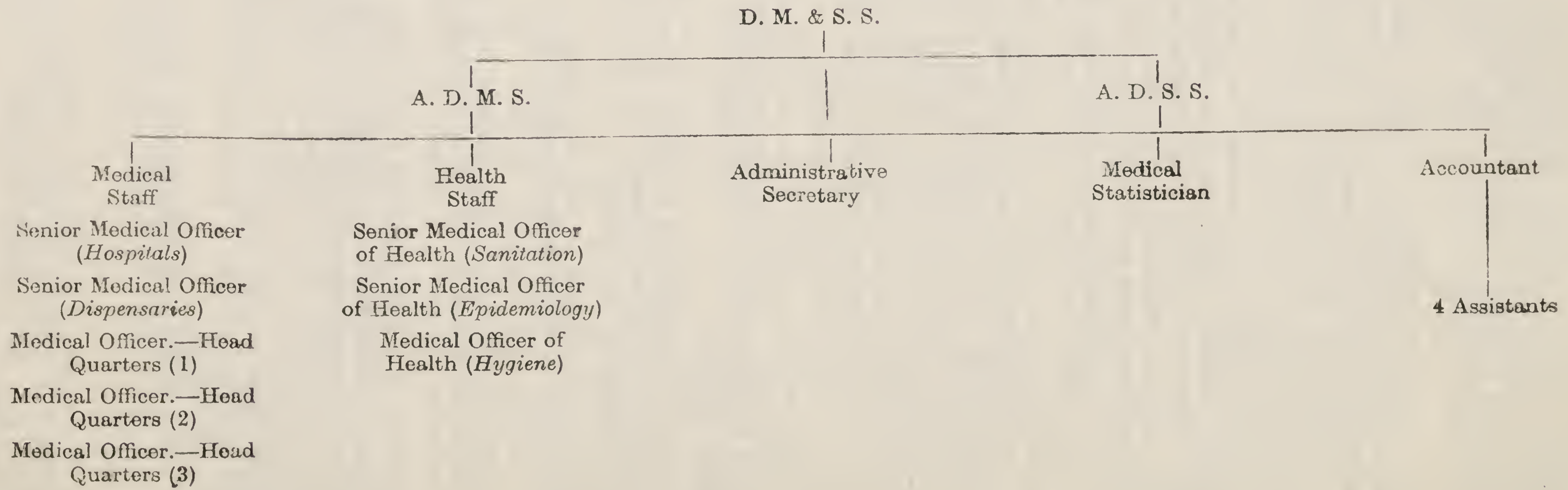
The Director of Medical and Sanitary Services has two principal assistants, the Assistant Director of Medical Services who is in charge of the Medical work of the department and the Assistant Director of Sanitary Services in charge of the Preventive work.

The organization of the Department at Headquarters in Colombo is shown in Chart No. 1.

CHART I

MEDICAL & SANITARY SERVICES

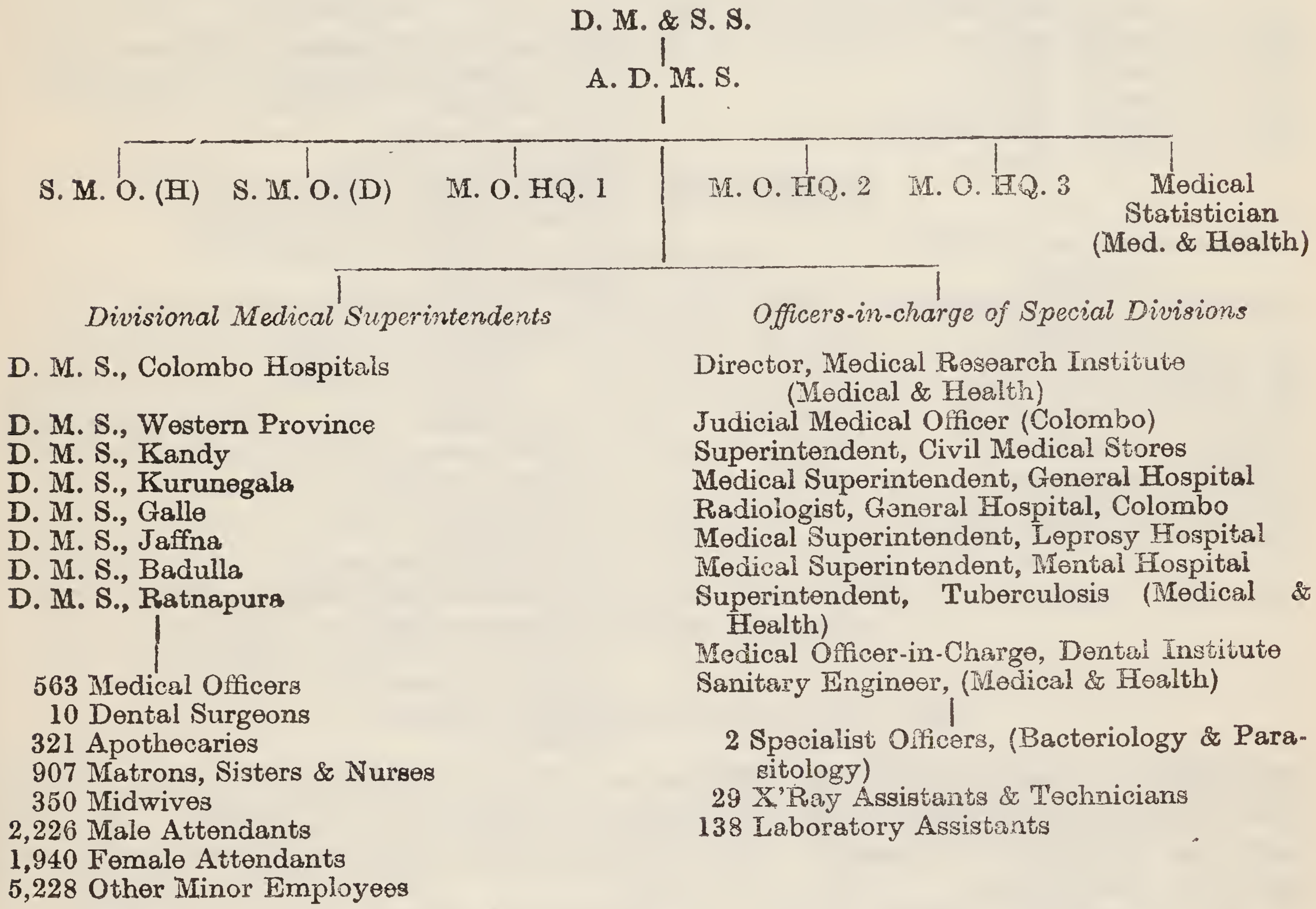
HEAD QUARTER STAFF


D. M. & S. S.
A. D. M. S.
A. D. S. S.
Medical Staff
Senior Medical Officer (*Hospitals*)
Senior Medical Officer (*Dispensaries*)
Medical Officer.—Head Quarters (1)
Medical Officer.—Head Quarters (2)
Medical Officer.—Head Quarters (3)
Health Staff
Senior Medical Officer of Health (*Sanitation*)
Senior Medical Officer of Health (*Epidemiology*)
Medical Officer of Health (*Hygiene*)
Administrative Secretary
Medical Statistician
Accountant
4 Assistants

In addition to the two Assistant Directors there are on the Medical side two Senior Medical Officers and three Grade Medical Officers; on the Health side there are two Senior Medical Officers of Health and one Medical Officer of Health.

The non-medical staff who are common to both the sections of the Department consists of a Chief Accountant and 4 Assistant Accountants, an Administrative Secretary and a Medical Statistician. The staff on the medical side is shown in the Chart below:—

CHART II



D. M. & S. S.

A. D. M. S.

S. M. O. (H) S. M. O. (D) M. O. HQ. 1 M. O. HQ. 2 M. O. HQ. 3 Medical Statistician (Med. & Health)

Divisional Medical Superintendents

D. M. S., Colombo Hospitals

D. M. S., Western Province
D. M. S., Kandy
D. M. S., Kurunegala
D. M. S., Galle
D. M. S., Jaffna
D. M. S., Badulla
D. M. S., Ratnapura

563 Medical Officers
10 Dental Surgeons
321 Apothecaries
907 Matrons, Sisters & Nurses
350 Midwives
2,226 Male Attendants
1,940 Female Attendants
5,228 Other Minor Employees

Officers-in-charge of Special Divisions

Director, Medical Research Institute (Medical & Health)
Judicial Medical Officer (Colombo)
Superintendent, Civil Medical Stores
Medical Superintendent, General Hospital
Radiologist, General Hospital, Colombo
Medical Superintendent, Leprosy Hospital
Medical Superintendent, Mental Hospital
Superintendent, Tuberculosis (Medical & Health)
Medical Officer-in-Charge, Dental Institute
Sanitary Engineer, (Medical & Health)

2 Specialist Officers, (Bacteriology & Parasitology)
29 X'Ray Assistants & Technicians
138 Laboratory Assistants

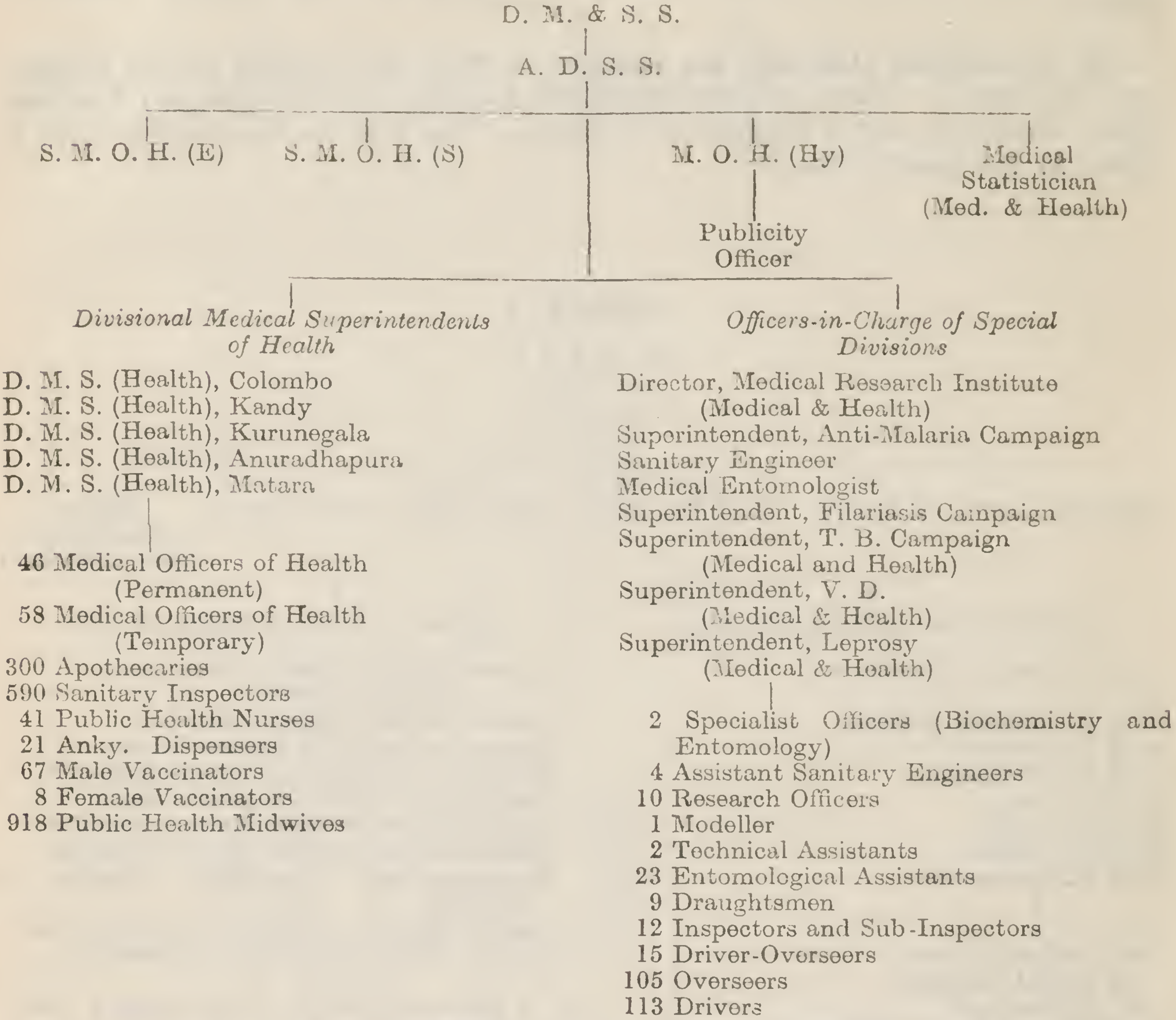
The Supervisory officers who are not at Headquarters are of two types—the Divisional Medical Superintendents and the Officers in Charge of Special Divisions. The latter officers with a few exceptions like the Judicial Medical Officer and the Medical Superintendent, General Hospital, are common to both the Curative and Preventive-sides.

There are 8 Divisional Medical Superintendents and they are in general supervisory charge of all the Medical Officers in the districts.

The other officers in the field doing curative work comprise 563 Medical Officers, 10 Dental Surgeons, 321 Apothecaries, 907 Matrons, Sisters and Nurses, 350 Midwives, 2,226 Male Attendants, 1,940 Female Attendants and 5,228 other minor employees, making a total of 11,545 officers exclusive of those in charge of special divisions.

The organization of the Field Services on the Preventive side is similar to that of the Curative side and consists of Divisional Medical Superintendents of Health and officers in charge of specialist divisions, who as already stated, are with few exceptions common to both the services. The following chart gives the staff on the Health side:—

CHART III



D. M. & S. S.

A. D. S. S.

S. M. O. H. (E)
S. M. O. H. (S)
M. O. H. (Hy)
Medical Statistician (Med. & Health)
Publicity Officer

Divisional Medical Superintendents of Health

D. M. S. (Health), Colombo
D. M. S. (Health), Kandy
D. M. S. (Health), Kurunegala
D. M. S. (Health), Anuradhapura
D. M. S. (Health), Matara

46 Medical Officers of Health (Permanent)
58 Medical Officers of Health (Temporary)
300 Apothecaries
590 Sanitary Inspectors
41 Public Health Nurses
21 Anky. Dispensers
67 Male Vaccinators
8 Female Vaccinators
918 Public Health Midwives

Officers-in-Charge of Special Divisions

Director, Medical Research Institute (Medical & Health)
Superintendent, Anti-Malaria Campaign
Sanitary Engineer
Medical Entomologist
Superintendent, Filariasis Campaign
Superintendent, T. B. Campaign (Medical and Health)
Superintendent, V. D. (Medical & Health)
Superintendent, Leprosy (Medical & Health)

2 Specialist Officers (Biochemistry and Entomology)
4 Assistant Sanitary Engineers
10 Research Officers
1 Modeller
2 Technical Assistants
23 Entomological Assistants
9 Draughtsmen
12 Inspectors and Sub-Inspectors
15 Driver-Overseers
105 Overseers
113 Drivers

It will be observed that the number of Divisional Medical Superintendents and of Divisional Medical Superintendents of Health is not identical. In consequence the areas of these two types of Divisional Officers of the Department are not co-terminous.

The field staff working under the Divisional Medical Superintendents of Health consist of 104 Medical Officers of Health, 590 Sanitary Inspectors, 41 Public Health Nurses, 918 Public Health Midwives, 300 Apothecaries in Rural Hospitals and Dispensaries, 75 Vaccinators and 21 Ankylostomiasis Dispensers.

On the Curative as well as the Preventive side there is a gradation of the services. Medical care is administered in three types of institutions. There is the Provincial Hospital, which is a large institution intended to have a capacity of 500 to 700 beds for the major and specialist types of diseases; next in order is the District Hospital varying in size from 50 to 200 beds and equipped to cater for the ordinary types of medical, surgical and obstetrical cases and finally there is the Central Dispensary to which is attached a Maternity Home for normal cases of pregnancy and a small hospital for the very simple types of disease.

The last institution is common to both the Curative and Preventive side.

On the health side the gradation is from the Divisional Office to the Health Unit and finally to the Health Centres and Dispensaries.

All the institutions on the Health and Curative sides are linked by an Ambulance Service and, to a progressively increasing degree, by telephones facilitating the exchange of patients between the various institutions.

According to the present administrative set-up there is unification of the preventive and curative services at the centre and in the periphery. At the intermediate level District Medical Officers confine themselves to curative work and the Medical Officers of Health to preventive work.

The most outstanding need in the administration is for more trained personnel on the curative as well as on the preventive sides. Most of the District Hospitals are manned by a single Medical Officer, and out of the 104 posts of Medical Officers of Health only 46 are filled by permanent Medical Officers of Health. The shortage of staff is also seen in Nurses for hospitals and Public Health Nurses for Health work.

Our most urgent need therefore is for the provision of better facilities for the training of all grades of Medical and Health personnel. This has already received the attention of the Department but the training of medical personnel takes a long time to materialize, and added to this there is a high rate of losses among the trained Nurses and Midwives who retire after a short period of service.

In spite of the shortage of staff and the virtual cessation of work on medical buildings during the war years the Department of Medical and Sanitary Services has made more progress during the last two decades following the reorganization of the Department, and particularly during the year under review than during any other period of its history.

II—VITAL STATISTICS

(i) *Population*

The population figures given in the table below are estimated on the basis of the 1946 Census. It will be observed that the population in Ceylon is distributed unevenly throughout the Provinces varying from 2,000,000 in the Western Province to 151,000 in the North-Central Province. The North-Central Province with an area of 4,009 square miles is more than two and half times the size of the Western Province. A densely populated area in one part of the country creates problems of medical and preventive medicine due primarily to overcrowding and bad housing, while a sparsely populated and scattered area creates problems of a different type due largely to transport difficulties and, in the past at least, to high Malaria incidence.

TABLE I—POPULATION MID-YEAR 1948

	Population (Thousands)			*Proportion Per 1,000*
Province	*Males*	*Females*	*Persons*	*Persons*
1. Western	1,082	919	2,001	282
2. Central	635	565	1,200	169
3. Southern	566	511	1,027	145
4. Eastern	160	132	292	41
5. Northern	260	250	510	72
6. North-Central	89	62	151	21
7. North-Western	382	329	711	100
8. Sabaragamuwa	427	371	798	113
9. Uva	209	187	396	56
Whole Island	3,760	3,326	7,086	1,000

Note :—The distribution of population by Sex is estimated on the basis of the 1946 Census.

(ii) *Births and Deaths*

The principal Vital Statistics for the Island are given in Table II. The Birth Rate is one of the highest on record and has been exceeded only in 1921, 1926, 1927 and 1928. The increase in the number of births over 1947 is 16,518. The Death Rate of 13.2 is the lowest on record. There were 4,833 less deaths in 1948 than in 1947. The increase in the Birth Rate and the accompanying decrease in the death rate are very desirable features but the fact must not be lost sight of that unless action is taken well in advance and with foresight fresh problems of Public Health such as housing and nutrition are bound to be created in the future, by the increasing growth of population.

Table II—Births and Deaths

Period	*Birth Rate per 1,000 living*	*Number of Births registered*	*Estimated Population*	*Number of Deaths registered*	*Death Rate per 1,000 living*	*Infant Mortalit Rate*
1871–1880*	27·4	70,815	2,584,780	58.836	22·8	—
1881–1890*	28·9	83,664	2,888,104	69,238	24·0	158
1891–1900*	34·1	112,204	3,295,279	89,664	27·2	169
1901–1910*	38·0	145,962	3,838,750	110,347	28·7	180
1911–1920*	38·2	164,807	4,311,328	132,866	30·8	196
1921–1930*	39·5	194,611	4,920,028	128,916	26·2	182
1931–1940*	36·4	204,845	5,628,000	129,558	23·0	171
1921	40·7	183,917	4,521,762	140,749	31·2	192
1922	39·1	179,856	4,603,034	126,820	27·5	188
1923	38·7	181,437	4,684,306	141,891	30·3	212
1924	37·5	178,867	4,765,578	122,958	25·8	186
1925	39·9	193,261	4,846,850	117,543	24·3	172
1926	42·0	206,888	4,928,122	124,884	25·3	174
1927	41·0	205,469	5,009,394	113,003	22·6	160
1928	41·9	213,308	5,090,666	132,334	26·0	177
1929	38·3	198,005	5,171,938	135,274	26·1	187
1930	39·0	205,106	5,253,210	133,708	25·4	175
1931	37·4	199,170	5,325,354	117,452	22·1	158
1932	37·0	199,370	5,386,106	110,649	20·5	162
1933	38·6	209,032	5,415,516	114,690	21·2	157
1934	37·2	206,512	5,551,623	127,069	22·9	173
1935	34·4	192,755	5,598,467	204,823	36·6	263
1936	34·1	192,060	5,631,000	123,039	21·8	166
1937	37·8	216,072	5,712,000	124,210	21·7	158
1938	35·9	208,389	5,810,000	122,299	21·0	161
1939	36·0	212,111	5,897,000	128,611	21·8	166
1940	35·8	212,980	5,951,000	122,738	20·6	149
1941	36·5	219,864	6,020,000	113,003	18·8	129
1942	36·7	221,064	6,021,000	112,044	18·6	120
1943	40·6	248,820	6,134,000	131,061	21·4	132
1944	37·1	232,827	6,276,000	133,985	21·3	135
1945	36·7	238,494	6,496,000	142,931	22·0	140
1946	38·4	256,886	6,695,000	135,937	20·3	141
1947	39·4	271,177	6,879,000	98,544	14·3	101
1948	40·6	287,695	7,086,000	93,711	13·2	92

*Annual Average rates and figures for the Decades, 1871 to 1940.

The main causes of deaths registered in Ceylon are given in Table III below The figures for 1947 and 1948 are given for purposes of comparison. It will be observed that there is a marked reduction in the number of deaths from Typhoi and Paratyphoid fevers, Malaria and Malarial Cachexia and Diseases o pregnancy, child-birth and the puerperal state. These are all preventible Cause of Death and a reduction in their numbers is indicative of the fact that th Public Health measures have been effective.

Table III—Main Causes of Deaths Registered in Ceylon

		1947	*1948*
	All Causes	98,544	93,71
1.	Infectious and Parasitic diseases	17,192	15,83
	Typhoid fever and paratyphoid fever	1,078	86
	Diphtheria	114	14
	Influenza	1,306	1,13
	Dysentery	931	71
	Tuberculosis of the Respiratory System	3,510	3,77
	Tuberculosis of other organs	322	27
	Disseminated Tuberculosis—Acute	10	1
	Chronic	—	
	Malaria fever and Malarial Cachexia	4,557	3,34
	Black Water fever	5	
	Ankylostomiasis	1,065	91
2.	Cancer and other tumours	881	97
3.	Rheumatic diseases, Nutritional diseases, Diseases of the Endocrine Glands and other General Diseases	7,457	6.97
	Acute Rheumatic fever	1,900	1,77
	Rickets	422	47
	Mandama	4,513	4,10

		1947	1948
4.	Diseases of the blood and blood making organs	2,100	1,955
5.	Chronic Poisonings and intoxicants	7	11
6.	Diseases of the nervous system and of the organs of the special sense	11,172	11,082
	Infantile convulsions (age under 5 years)	8,170	8,115
7.	Diseases of the Circulatory System	3,152	3,322
8.	Diseases of the Respiratory System	11,584	11,203
	Bronchitis	1,040	1,177
	Broncho-pneumonia including capillary Bronchitis	2,488	2,932
	Lobar Pneumonia	1,547	1,459
	Pneumonia, unspecified	4,445	3,705
9.	Diseases of the Digestive System	6,407	6,569
	Diarrhoea and Enteritis (under 2 years of age)	1,560	1,845
	Diarrhoea and Enteritis (2 years and over)	3,243	3,191
10.	Non-venereal diseases of the Genito Urinary System and Annexa	1,579	1,543
11.	Diseases of Pregnancy, child birth and the Puerperal state	2,863	2,377
	Puerperal Haemorrhage	373	376
	Puerperal Sepsis not returned as post-abortive	660	505
	Puerperal Albuminuria and Convulsions	1,132	875
12.	Diseases of the Skin and Cellular tissue (Excludes Rathe of Infants)	915	707
13.	Disease of the bones and organs of locomotion	24	23
14.	Congenital Malformations	80	119
15.	Diseases of early infancy (includes Rathe)	14,894	14,407
	Congenital debility	6,026	5,977
	Premature birth	4,687	4,540
	Rata	3,908	3,550
16.	Old age	7,010	6,918
17.	Violent and accidental deaths	3,488	3,212
18.	Ill-defined causes of deaths	7,739	6,475
	Cases of death unstated or undefined :—		
	(*a*) Dropsy	1,044	1,001
	(*b*) Pyrexia	5,311	4,333

Infant Mortality

A reference to Table II will reveal that the Infant Mortality Rate of 92 per 1,000 live births is the lowest ever recorded. After the very high rate of 263 in 1935 consequent upon the great Malaria Epidemic this rate dropped consistently until 1943 when, largely due to nutritional factors which were universally prevalent, it showed a temporary increase during the three succeeding years. In 1947 the rate dropped to 101 which was the lowest recorded up to that year. The fact that the rate has been further reduced in 1948 is significant.

Table IV gives an analysis of the Infant Mortality Rate and the Neo-natal Mortality Rate by Provinces.

Three Provinces, the Central, Eastern and North-Central still have Infant mortality rates above 100.

The Neo-natal deaths, by which is meant the deaths of infants during the first month of life, account for more than 50 per cent. of the total number of infant deaths.

Table IV—Infant Mortality Rates by Provinces, 1948

	Province	*Population in Thousands*	*Birth Rate*	*Infant Mortality Rate*	*Neo-Natal Mortality Rate*	*Mortality Rate. One Month to 12 Months*
1.	Western	2,001	35·5	93	51	42
2.	Central	1,200	44·3	103	62	41
3.	Southern	1,027	41·9	79	45	33
4.	Eastern	292	41·2	126	69	57
5.	Northern	510	38·3	83	42	42
6.	North-Central	151	44·6	102	58	44
7.	North-Western	711	43·4	89	52	37
8.	Sabaragamuwa	798	40·3	80	47	32
9.	Uva	396	48·1	99	57	41
	Ceylon	7,086	40·6	92	53	40

An examination of Table V, will reveal that the chief causes of infant deaths are Prematurity, Debility (Malnutrition) Convulsions, Diarrhoeas and Enteritis and Pneumonia.

TABLE V—INFANT DEATHS IN THE PRINCIPAL TOWNS

Causes	*Number of Deaths*		
	1946	*1947*	*1948*
No. of Principal Towns	43	43	46
Infant Mortality	6,762	6,220	6,527
(A) *One Week and Under :*			
1. Prematurity	1,362	1,247	1,305
2. Debility	783	672	756
3. Convulsions	118	80	93
4. Tetanus	4	7	14
5. Bronchitis	2	1	4
6. Pneumonia	17	26	52
7. Other causes	231	263	443
(B) *Over One Week and Under One Year :*			
1. Prematurity	368	421	256
2. Debility	1,027	837	836
3. Convulsions	477	457	379
4. Diarrhoea	96	131	166
5. Enteritis	639	686	722
6. Tetanus	31	26	28
7. Bronchitis	72	53	64
8. Pneumonia	633	611	662
9. Syphilis	11	24	24
10. Other causes	891	678	723

Maternal Mortality

The Maternal Mortality Rate as computed in Ceylon represents the number of deaths of women from diseases of pregnancy, child-birth and the puerperal state (International List 140—150) per 1,000 live births. As still births are registered only in the principal towns it has not been possible to compute a rate on the basis of total births as well.

Table VI gives the Maternal Mortality Rate by years since 1931 and the average for the preceding decade. The Maternal Mortality Rate like the Infant Mortality Rate is the lowest recorded for the Island.

TABLE VI—MATERNAL MORTALITY

Period	*Number*	*Rate per 1,000 Live Births*
1921-1930	3,847	19·8
1931-1940	4,111	20·1
1931	4,142	20·8
1932	3,821	19·2
1933	3,882	18·6

Period	*Number*	*Rate per 1,000 Live Births*
1934	4,155	20·1
1935	5,165	26·5
1936	4,158	21·6
1937	4,304	19·9
1938	4,195	20·1
1939	3,869	18·2
1940	3,423	16·1
1941	3,369	15·3
1942	3,194	14·4
1943	3,321	13·3
1944	3,179	13·7
1945	3,940	16·5
1946	3,987	15·5
1947	2,863	10·6
1948	2,377	8·3

A reference to Table III will reveal that although the number of deaths from Albuminuria and Convulsions has been reduced it is still the largest single cause of death accounting for nearly a third of all the Maternal Deaths.

(Where Statistics are dealt with by locality the reference is to the " place of occurrence " of the event and not to " the residence " of the party or parties.)

III—MEDICAL CARE

The institution of medical care is a responsibility of the Central Government. A national medical service offers free outdoor medical treatment to the people. With regard to indoor treatment it is free for the poorer classes but a small charge is made in the case of certain income groups. A charge of 30 cents per diem is made from those patients with incomes between Rs. 50 and Rs. 83.33 per mensem for accommodation in a non-paying ward. Where the income exceeds Rs. 83.33 per mensem a charge of 50 cents is made.

There are however in addition to the general wards of the hospitals special paying wards to which patients who desire to have a greater measure of comfort can be admitted. The charges for these wards are also determined by the income of the patient and vary from Rs. 4 per diem in the second class paying wards to Rs. 15 per diem in first class paying wards.

The existence of such a national service is no barrier to the practice of medicine by private general medical practitioners and even Medical Officers in the National Service are allowed a limited amount of private practice.

Medical care is given in general hospitals which have both in-door and out-door departments, in the specialized institutions and in the dispensaries which are intended primarily for the out-door treatment of patients.

Medical Institutions

There are 246 Government Hospitals distributed over the Island providing a total bed strength of 18,822, i.e., 2.7 beds for every 1,000 of the population—this figure includes 5,938 beds in special institutions. There are therefore 12,884 beds available in Hospitals for the treatment of general diseases. These hospitals include 100 Rural Hospitals providing accommodation for 1,885 and 19 Cottage Hospitals with accommodation for 389 beds. The District and Provincial Hospitals are of varying sizes and accommodate from 40 in the smaller to 1,294 beds in the General Hospital, Colombo. Table VII indicates the distribution of hospitals, other than special institutions, in the Island, arranged according to Provinces and Districts.

(A) HOSPITALS

TABLE VII—PROVINCIAL AND DISTRICT HOSPITALS

Area	*No. of Hospitals*	*No. of Beds*
Wester Province :		
Colombo and Negombo	9	2,256
Kalutara	6	477
Central Province :		
Kandy	12	1,388
Matale	2	259
Nuwara Eliya	8	427
Southern Province :		
Galle	4	600
Matara	2	273
Hambantota	4	272
Northern Province		
Jaffna	7	734
Mannar	3	156
Vavuniya	2	112
Eastern Province :		
Batticaloa	3	171
Trincomalee	1	150
North-Western Province :		
Kurunegala	5	871
Puttalam-Chilaw	4	327
North-Central :		
Anuradhapura	2	159
Province of Sabaragamuwa :		
Ratnapura	8	643
Kegalla	5	583
Province of Uva :		
Badulla	11	752
Total	98	10,610

TABLE VIII—COTTAGE HOSPITALS

Area	*No. of Hospitals*	*No. of Beds*
Western	3	72
Central	5	88
Southern	2	36
Eastern	2	32
Northern	2	32
North-Central	1	28
North-Western	1	46
Sabaragamuwa	1	18
Uva	2	37
Total	19	389

TABLE IX—RURAL HOSPITALS

Area	No. of Hospitals	No. of Beds
Western	10	186
Central	20	352
Southern	20	384
Eastern	8	136
Northern	7	126
North-Central	5	150
North-Western	19	382
Sabaragamuwa	9	143
Uva	2	26
Total	100	1,885

Special Institutions provide accommodation for 5,938 beds and are described in another part of this report.

During the year under review, 662,433 patients were treated in hospitals and there were 19,827 deaths. The percentage of deaths to those treated being 3.00.

The following table gives the number of patients treated and the number of deaths in hospitals by provinces.

TABLE X—HOSPITAL STATISTICS OF IN-PATIENTS

Provinces and Districts	No. treated in 1948	Deaths in 1948
Western Province :		
Colombo District	169,955	6,636
Kalutara District	31,889	1,100
Central Province :		
Kandy District	75,863	2,361
Nuwara Eliya District	19,896	542
Matale District	15,890	374
Southern Province :		
Galle District	38,635	1,175
Matara District	18,911	536
Hambantota District	19,129	483
Northern Province :		
Jaffna District	30,821	620
Mannar District	6,533	141
Vavuniya District	3,977	88
Eastern Province :		
Batticaloa District	8,846	232
Trincomalee District	5,919	134
North-Western Province :		
Kurunegala District	60,124	1,787
Puttalam District	14,580	498
North-Central Province :		
Anuradhapura District	25,478	414
Province of Uva :		
Haputale District	36,186	731
Province of Sabaragamuwa :		
Ratnapura District	39,210	1,138
Kegalla District	40,591	837
Total	662,433	19,827

STAFF OF MEDICAL INSTITUTIONS

Medical Officers are recruited to the service on graduation from the University, when they enter the Preliminary Grade. After two years of satisfactory service they are required to pass a departmental confirmation test when they enter Grade II. For promotion to Grade I, an officer is required to remain for two years on the maximum salary of Grade II after which he is promoted to Grade I provided:—

(i) he obtains one of the specialist qualifications prescribed by the Department, or

(ii) he undergoes a local post—licentiate course of training extending over a period of one year.

Promotion to Supra Grade is by selection.

During the year under review, 51 Medical Officers were recruited to the Curative side of the service. Twenty four officers were granted study leave to obtain specialized qualifications prescribed by the Department and of this number two were sent to the United States of America and Canada for specialization in Public Health.

Six Medical Officers in Grade II completed a year's post—licentiate course of training in the University of Ceylon in June, 1948, and a further batch of six officers commenced the course in July. Fifteen permanent and four temporary Medical Officers were trained in Health work in Kalutara during the year—for periods of one month and two months respectively.

Nursing Staff.—Two American Sister Tutors have been recruited on a four year's agreement through the Rockefeller Foundation to organize the training of Nurses at the Nurses' Training School, Colombo, where 226 English-speaking nurses are undergoing the three years' course of training. Six nurses are undergoing a one year's course of Post Graduate Training for which about ten nurses are selected annually. Recruitment to this Grade from abroad therefore has been stopped.

In addition to the English-speaking nurses, there are 223 Swabasha Nurses, undergoing a three year training in the vernacular at the Nurses' Training School, Colombo, and in Kandy. It is not proposed however to recruit any more candidates to this Grade, Instead, nurses to be trained in the vernacular, will be admitted to a new grade, the pupil Assistant Nurses Grade, for which the period of training will be 18 months. Opportunities will be afforded to these Assistant Nurses to qualify as Nurses later. Six candidates possessing the London Matriculation qualification have been sent to India for further studies with a view to obtaining the B.Sc. degree in Nursing. Arrangements are also being made to send a Matron (Higher Grade) to India for a six months course of training in Nursing Administration.

TABLE XI—STAFF (MAJOR AND MINOR) OF MEDICAL INSTITUTIONS

Medical Officers :	
Supra Grade	19
Psychiatric Service Grade I	2
Psychiatric Service Grade II	5
Medical Officers—Grade I	127
Medical Officer—Grade II	252
Medical Officers Preliminary Grade	180
Apothecaries	321
Matrons	83
Nursing Staff :	
Nurses	618
Sisters	28
Tutors	10
Mothers (Religous)	9
Sisters (Religous)	159
Other Major Staff	72
Minor Staff :	
Midwives	350

Attendants :

Male	2,226
Female	1,940
Other Minor Staff	5,228

(i) GENERAL HOSPITAL, COLOMBO

This hospital provides accommodation for 1,294 beds which figure includes 115 beds in the paying section.

During the year under review 55,797 patients (1,451 paying and 54,346 non-paying) were treated in this hospital, the daily average sick being 2,185. There were 2,568 deaths in the hospital during this period and the percentage of deaths to those treated was 4.6. The largest number of patients in hospital on any one day was 2,489 non-paying patients on November 9, 1948, and 115 paying patients on June 18, 1948. The smallest number was 1,796 non-paying patients on April 14, 1948, and 109 paying patients on December 22, 1948. In all 11,423 operations were performed in the hospital during the year, of which number 792 minor operations were performed at the Out-Patients' Department. The total number of out-patients treated at the Out-Patients' Department was 151,139—the total number of visits paid being 460,857 and the daily average 1,259.

Clinics

The *Diabetic* Clinic had an average daily attendance of 60. Males form the larger number, the average age of those treated being 45 years. 65 per cent. of the cases were moderately severe; 15 per cent. mild and 20 per cent. were severe cases.

The *Asthma* Clinic was reorganised in August 1948, and 1,205 cases were treated. The total number of visits paid to this clinic was 4,264.

Rectal and *Varicose Veins* Clinics are held by the Visiting Surgeon, Out-Patients' Department.

A Venereal Diseases Clinic is conducted in the Hospital. A detailed account of the work done in this connection is shown elsewhere in the report.

Ear, Nose and *Throat* Clinics are held at the Out-patients' department on three mornings a week. Apart from the clinics, the Surgeon-in-charge is allotted 38 beds in the wards for patients requiring Indoor Treatment. At the clinics 11,408 patients were treated during the year and the total number of visits paid was 22,323.

Orthopaedic Clinic

The clinic is open daily for the treatment of ambulatory orthopaedic cases and also provides facilities for rehabilitation. There is a ward of 20 beds for crippled children. During the year 8,618 patients were treated at the clinic of whom 2,895 were new cases. Artificial limbs were supplied to 32 patients.

Blood Bank

During the year blood was collected from 1,933 donors. An honorarium of Rs. 10 per donor was paid to 1,814 of these donors. In all 3,566 bottles of blood, each containing about half a pint, were collected. 1,659 blood transfusions were given to patients at the General Hospital.

X'Ray Department

23,194 patients in the non-paying and 1,677 patients in the paying-section making a total of 24,871 patients were afforded X'Ray examinations. In the Electro-therapeutic section, 17,542 sittings were given to non-paying patients and 912 to paying patients.

Deep Ray Department

4,542 patients were given Deep Ray therapy during the year. Electro-cardiographic tracings were made in 6,636 patients.

Pathological Department

Reports on the following were made during the year:—

Urine	41,147 specimens
Faeces	69,628
Sputum	11,924
Blood	94,446
Gastric Contents	3,510
Cerebro Spinal Fluid	4,097
Smears	2,112
Tissue Sections— General Hospital	2,487
Tissue Sections— Outstations	606
Tissue Sections— Post Mortem	230

During the year 219 Post Mortem examinations were made. The Medical section of the Out-patients department was moved to the building previously occupied by the Military in Regent Street.

(ii) CIVIL HOSPITAL, KANDY

This is the largest outstation hospital and has accommodation for 618 beds—the daily average of sick in hospital was 1,035. There were 1,272 deaths in the hospital during the year. Attached to the hospital is a School for Swabasha Nurses where 96 pupils are undergoing training. During the year under review 1,461 operations were performed in the hospital. Of this number 828 were major operations and 633 were minor. In addition 108 obstetric operations were performed.

Eye Department

250 operations were performed in the hospital; while 230 minor ophthalmic operations were performed at the outdoor.

Dental Clinic

The total number of patients treated at the Clinic was 8,788—with a daily average attendance of 40.

The following work was performed:—

Extractions	9,926
Fillings	584
Scalings	480

Blood Bank

44 blood transfusions were given to patients in the hospital.

Pathological Department

Reports on the following were made during the year:—

Urine	19,386 specimens
Faeces	8,818
Sputum	5,172
Blood	21,052
Gastric contents	15
Cerebro—spinal fluid	228
Smears	1,403
Cultures	591
Tissue Section	11

39 Post Mortem Examinations were made.

During the year under review the following new buildings were completed:—

1. Administration Block
2. Mortuary
3. Extensions to the Infectious Diseases Hospital

The following new buildings were under construction:—

1. Hospital Kitchen
2. Extensions to House Officers' Quarters.

(iii) CIVIL HOSPITAL, GALLE

This Hospital has accommodation for 345 beds and during the year 18,497 patients were treated, the daily average of sick in hospital being 622. The following clinics are conducted at the Hospital:—

Eye Clinic at which 14,727 patients were treated.
Chest Clinic at which 7,607 patients were treated.
Ante-Natal Clinic at which 221 patients were treated.

253 major and 122 minor operations were performed, and the obstetric and gynæcological operations numbered 237. In the Eye Department 82 major and 273 minor operations were performed. No additions were made to the existing buildings during the year.

(iv) CIVIL HOSPITAL, KURUNEGALA

This Hospital has accommodation for 345 beds and the daily average sick in hospital was 622.

During the year 368 major and 146 minor operations were performed.

The number of obstetric operations was 89. Twelve Pupil Midwives commenced a course of training in October.

Dental Clinic

3,239 patients were treated at this clinic during the year and the following is a summary of the work performed:—

Extractions	2,473
Fillings	8
Scalings	50

X'Ray Department

3,324 patients were screened during the year.

Pathological Department

The following specimens were examined during the years:—

Urine	7,214
Faeces	145
Sputum	2,663
Blood	8,772
Smears	2,208

The following new buildings were completed during the year:—

Three light construction wards.
Quarters for Apothecary.
Quarters for Steward.
A covered way was built connecting the Maternity ward with the Paying ward.

(v) CIVIL HOSPITAL, JAFFNA

This Hospital has accommodation for 268 beds. The number of patients treated in this Hospital during 1948 was 11,486—the daily average of sick in hospital being 370. There were 266 deaths in hospital during the year. 670

major operations were performed during the year—also 1,946 minor and 288 obstetric operations. At the out-door department, 109,769 patients were treated during 1948. The following clinics were conducted at the hospital:—

1.	Eye Clinic	44,798 cases treated
2.	Dental Clinic	10,937 cases treated
3.	Venereal Diseases Clinic	8,503 cases treated

The hospital is provided with an X'Ray plant and during the year 7,254 patients were examined at it.

21,137 laboratory examinations were made.

The construction of the following buildings was completed:—

Out-patients' Department,
Hospital Kitchen.

(vi) PRISON HOSPITALS

There are 11 Prison Hospitals distributed over the larger towns in the Island with a total bed strength of 436. During the year 14,480 patients were admitted to these hospitals while 269,886 visits were paid to the out-patients dispensaries attached to these hospitals. The latter figure includes visits paid by Prison Officers and their families.

(vii) POLICE HOSPITAL, COLOMBO

This hospital consists of two non-paying wards of 56 beds and a paying ward of 4 beds and caters to the medical needs of the rank and file of the force in Colombo. During the year 1948 the number of patients admitted was 1,134 and the daily average of sick was 27. There was one death during this period from Pulmonary Tuberculosis.

At the out-patients department attached to the hospital, 10,890 visits were paid by members of the force and their families.

Table XII—Sick Treated in the Government Hospitals in Ceylon during the Year 1948

	Diseases (Groups)	*Remaining in Hospital at the end of 1947*	*Admissions in 1948*	*Deaths in 1948*	*Total cases treated in 1948*	*Remaining in Hospital at the end of 1948*
1.	Epidemic, Endemic and Infectious Diseases	4,634	120,180	4,636	124,814	5,303
2.	General Diseases not mentioned in (1)	754	27,572	878	28,326	958
3.	Affections of the Nervous System and Organs of the Senses	879	23,677	888	24,556	829
4.	Affections of the Circulatory System	283	9,109	1,209	9,392	333
5.	Affections of the Respiratory System	1,279	60,918	2,478	62,197	1,347
6.	Diseases of the Digestive System	1,391	74,023	3,001	75,414	1,658
7.	Diseases of the Genito Urinary System: (non-venereal)	712	23,337	685	24,049	654
8.	Puerperal State*	3,282	110,859	885	114,141	4,823
9.	Affections of the Skin and Cellular Tissues	2,068	63,088	375	65,156	1,803
10.	Diseases of Bones and Organs of Locomotion. (Other than Tuberculosis)	126	3,792	31	3,918	154
11.	Malformations	1	60	10	61	2
12.	Diseases of Infancy	150	6,717	2,346	6,867	138
13.	Affections of Old Age	176	5,088	521	5,264	283
14.	Affections produced by External Causes	1,096	43,117	777	44,213	1,185
15.	Ill-defined Diseases	1,861	72,204	1,107	74,065	1,821
	Totals	18,692	643,741	19,827	662,433	21,291
	* The Admission figures for Ante-Natal Cases were as follows	909	20,262	24	21,171	1,271

(B) DISPENSARIES

Central Dispensaries are for the most part established in remote rural areas. They serve as out-posts of the Government Medical service and are intended primarily to render out-door medical treatment. The more serious cases requiring in-door treatment are sent to the District and Provincial Hospitals.

In the present stage of development of the Department, for want of qualified Medical Officers, the majority of Central Dispensaries is in charge of qualified Apothecaries. At the beginning of the year 1948 there were 13 Central Dispensaries in charge of Medical Officers and 196 Central Dispensaries in charge of Apothecaries. 174 Branch Dispensaries and 502 Visiting Stations were attached to these Dispensaries. 13 new Central Dispensaries were established in the course of the year, and 3 Rural Hospitals were converted into Central Dispensaries and Maternity Homes.

The work of the Apothecaries at the Central Dispensaries is supervised by Medical Officers of Health.

Outdoor treatment is not confined to Central Dispensaries only but is available at all the District and Provincial Hospitals. Previously there was no co-ordination between the Dispensary and Hospital Services. Now, with the introduction of an Ambulance Service, it is possible for serious cases from Central Dispensaries to be sent to District and Provincial Hospitals.

The total number of cases treated at the Outdoor Dispensaries all over the Island is 8,332,086. The largest number received treatment for Influenza. The diseases treated at Hospital Out-Patients' Departments and Dispensaries were as follows:—

	Cases Treated
(i) Epidemic, Endemic and Infectious Diseases	2,041,157
(ii) General Diseases not mentioned above	983,673
(iii) Affections of the Nervous System and Organs of the Senses	312,105
(iv) Affections of the Circulatory System	24,080
(v) Affections of the Respiratory System	841,582
(vi) Diseases of the Digestive System	2,133,706
(vii) Diseases of the Genito-Urinary System (Non-venereal)	343,946
(viii) Puerperal State	Nil
(ix) Affections of the Skin and Cellular Tissues	1,196,200
(x) Diseases of Bones and Organs of Locomotion (other than Tuberculosis)	40,556
(xi) Malformations	Nil
(xii) Diseases of Infancy	Nil
(xiii) Affections of Old Age	Nil
(xiv) Affections produced by External Causes	277,274
(xv) Ill-defined Diseases	137,807
Total	*8,332,086

* This figure does not indicate the number of patients treated. Repeated visits of the same patient after short intervals have been regarded as new cases.

The total number of qualified Apothecaries employed by the Department in 1948 was 621. The sanctioned strength was 675. Following is a detailed statement of the cadre in 1948:—

Sanctioned in Estimates	*No. end of 1947*	*Appointments in 1948*	*Deaths, Retirements, &c.*	*Total at end of 1948*	*Shortage*
675	567	68	14	621	54

It will be seen from the above figures that the supply of qualified Apothecaries was short of the number required and it has been found extremely difficult to arrange a satisfactory relief scheme in cases of illness and other emergencies. The staff allowed to most institutions at present is the barest minimum and a tremendous strain is put on the rest of the staff when a member of the staff reports sick or is taken away to afford relief to an officer in another establishment.

With a view to getting over this difficulty of affording relief to officers in emergencies, the Department has been compelled to engage the services of about

85 unqualified Acting Apothecaries who are either approved Dispensers or Pharmacists. It is, however, expected that sufficient numbers of qualified Apothecaries will be available by the end of 1952.

(C) SPECIAL INSTITUTIONS

(i) DE SOYSA MATERNITY HOSPITAL, COLOMBO

There is accommodation in this institution for 433 patients. There are 313 beds in the non-paying section and 20 beds in the paying section of the Hospital. A further 100 beds for post-natal cases are provided in the Branch Hospital, Regent Street. The daily average number of patients was 402.

Staff.—The Medical Staff consists of one Divisional Medical Superintendent (Colombo Hospitals), one Senior Visiting Obstetrician, one Professor of Obstetrics and Gynaecology, three Visiting Obstetricians and ten House Officers. The Nursing Staff consists of one Matron, four Sisters, 12 Trained Nurses, 27 Temporary Nurses and 22 Midwives. Four Apothecaries, one Relieving Apothecary and two Laboratory Assistants too are attached to the Hospital.

Admission.—The total number of patients treated for the year under review was 16,973 as against 12,859 ten years ago.

Deliveries.—The number of deliveries has increased in proportion from 8,427 in 1939 to 12,646 in 1948. The number was made up of 11,899 live-births, 624 still-births and 123 miscarriages.

With regard to the number of deliveries, out of the total of 12,523 live and still-births, 5,923 took place during day and 6,600 during the night.

Out of the total of 12,523 cases delivered there were 198 cases of twins and 9 cases of triplets. 11,817 of these were delivered by the vertex, 579 by the breach, and there were 64 face, 39 transverse and 24 brow presentations.

Still-births.—The still-birth rate shows a marked decrease from 73.1 per 1,000 live and still-births in 1939 to 49.9 per 1,000 live and still-births for the year 1948. Of the 624 cases, the total number of still-births for the year, severe anaemia and pre-eclamptic toxaemia were alone responsible for 314 foetal deaths.

Maternal Deaths.—There were 134 maternal deaths for 12,646 deliveries giving a maternal death rate of 10.6 per 1,000 deliveries. This compares very favourably with the maternal death rate of 23.1 in 1939. This substantial reduction in maternal mortality has been achieved under the headings: intercurrent diseases complicating pregnancy, haemorrhages of pregnancy, and toxaemias of pregnancy. This can be attributed to the large number of patients that sought ante-natal care and were admitted for treatment for conditions coming under the above groups. The blood transfusion service and the new anti-biotic drugs too had their share in the reduction of maternal mortality.

Infant Deaths.—The number of live-births was 11,899. Of these infants 11,261 left Hospital alive, while 638 died after delivery. The common causes of death fall under four headings, viz., developmental malformations, intracranial haemorrhage, asphyxia and infections. It is necessary to draw attention to the enormous importance of prematurity, as a factor in neo-natal mortality. Of the 11,899 babies born alive, 2,433 were premature (5 lbs. and under in weight.) These figures show that 20.4 per cent. of all live-births were premature, and that these 20.4 per cent. accounted for 65 per cent. of the deaths, while 79.6 per cent. that were full time births accounted for 35 per cent. of the deaths. These are striking figures and show to how large an extent the problem of reducing neo-natal mortality is bound up with the prevention of premature births, or, in the alternative, with the problem of the best possible management of premature infants.

Operations.—779 obstetric operations were performed during the year, necessitating the use of forceps in 411 cases, manual removal of placenta in 100 cases, Caesarian section in 52 cases, breech delivery in 48, primiparae versions in 42 cases, dilation and curettage in 43 cases, evacuation of the uterus in 21 cases, craniotomies in 18 cases: 44 other operations too were done.

Out-door Clinics.—Ante-natal Clinic—17,643 mothers paid 29,492 visits to the ante-natal clinic.

Post-natal Clinic—32 mothers paid 51 visits to the post-natal clinic.

Laboratory Work.—22,120 examinations were carried out at the local laboratory. Among these were 8,720 specimens of urine, 5,932 of faeces, 7,030 of blood and 438 other specimens. An interesting feature was that in the routine examination of 5,932 specimens of faeces 2,966 specimens were found positive for amoebae and cysts. The incidence of amoebiasis among expectant mothers admitted to Hospital is therefore very high and emphasises the fact that amoebiasis is an urgent Public Health problem in this country.

Puerperal Pyrexia and Sepsis.—There were 642 cases of puerperal pyrexia and 83 cases of puerperal sepsis making a total of 725 cases.

Out of nineteen deaths seven died of puerperal sepsis, six of anaemia complicating puerperium, three of typhoid fever and three of heart failure.

There was an outbreak of puerperal sepsis during the period January 28, 1948, to March 3, 1948, with 29 cases of puerperal sepsis. Two patients died of sepsis and 2 other cases died of puerperal pyrexia and anaemia. The sources of infection were traced to two patients. The rate of throat carriers was also fairly high, viz., 11.7 per cent. during this period. Proper investigations were carried out. Effective and prompt measures were adopted to control the outbreak of sepsis by early isolation of patients, closing of infected wards, disinfection and fumigation of wards and labour rooms, disinfection of linen and bed pans and other appropriate measures.

Neo-natal Diarrhoea.—An outbreak of epidemic diarrhoea of the new born commenced at this Institution in the latter part of May, 1948. The epidemic reached its peak in September, 1948, and was under control in November, 1948. There were 570 cases and 50 deaths in the seven months under review. The case fatality was 8.7 per cent.

The epidemic character of the disease was clearly shown and it was noted that an epidemic in one ward usually spread to one or more of the other wards. This incidence was approximately 7.2 per cent. It was higher among premature infants than among mature infants. A longer stay in Hospital, crowding in the wards, absence of special nurseries for premature infants and pippette feeding are probably the main causes of the higher incidence among the premature infants. The same remarks apply to abnormal infants born after prolonged and difficult labour.

Gastro-enteritis among infants in the first fortnight of life is responsible for at least 10.3 per cent. of the total neo-natal mortality. Although the part it plays is relatively small, its importance lies in the fact that these deaths are for the most part preventable.

A Medical Officer was appointed to investigate into and submit a report on the outbreak of epidemic diarrhoea in the new born at this Institution. He submitted his report on September 21, 1948, and subsequently he was attached to this institution and helped in the implementation of his recommendation which included—

(1) The appointment of a Paediatrician and a Pathologist to the De Soysa Maternity Hospital.
(2) The careful record-keeping of the infants' progress.
(3) The instruction of the mother in the care of the infant.
(4) Co-operation between the Hospital, the Public Health Nurse and the Private Practitioner.
(5) To ensure that breast-feeding is practised to the fullest possible extent.
(6) Careful precautions necessary in the preparation and giving of bottle feeds.
(7) The control of infection (detailed recommendations.)
(8) Accommodation for healthy infants.
(9) Accommodation for premature infants.
(10) Accommodation for sick infants.

(11) The adequate staffing of nurseries.
(12) The adequate staffing of nurses and midwives.
(13) Investigation and research.

Training of Midwives.—This institution continues to be the chief training school for midwives in the Island.

Table XIII—Annual Summary Figures of Ante-natal and Post-natal Clinics from January 1, 1948, to December 1948

Month	Ante-Natal		Post-Natal		Total
	First Visits	*Second Visits*	*First Visits*	*Second Visits*	
January	1,545	907	—	—	2,452
February	1,266	769	—	—	2,035
March	1,624	1,051	—	—	2,675
April	1,202	800	—	—	2,002
May	1,380	965	—	—	2,345
June	1,380	1,037	—	—	2,417
July	1,498	1,053	—	—	2,551
August	1,553	1,043	4	1	2,601
September	1,642	1,074	11	6	2,733
October	1,634	1,131	6	7	2,778
November	1,455	984	7	2	2,448
December	1,464	1,035	4	3	2,506
Total	17,643	11,849	32	19	29,543

(ii) LADY HAVELOCK AND LADY RIDGEWAY HOSPITALS

Women's and Children's Hospitals.—No special reports were written since 1941 owing to the curtailment of Administration Reports during and after the War.

In 1942, on being given only two days' notice, the Lady Ridgeway Hospital was evacuated to the Civil Hospital, Avissawella. Colombo was bombed just two days after this evacuation. The Lady Havelock Hospital was taken as a Casualty Station and its Wards had to be transferred to the Bacteriological Institute. In the same year, the upper wards of the Lady Ridgeway Hospital were occupied by the Sanitary Engineer's Department; and arrangements were also made for training Emergency Nurses.

In 1943, the Sanitary Engineer's Department gave back the Lady Ridgeway Hospital, and children began to come in gradually.

In 1944, the part of the Lady Ridgeway Hospital that was evacuated to Avissawella was brought back.

In 1945, additional accommodation for 14 Nurses was built on the premises. This consisted of 12 rooms and a sitting room with cement floors, timber walls and cadjan roof.

In 1946, the training of Pupil Ward Attendants was discontinued and a new scheme for training of Pupil Assistant Nurses was begun with 50 pupils. Later in the same year the status of these Nurses was changed to the same level as the Pupil Nurse under the title of Swabhasha Nurse. A Laboratory Assistant was also appointed during this year.

In 1947, Matron Barnes retired and she was succeeded by Matron Samarasinghe, the first Ceylonese to be appointed to this post.

For some years past several Conferences were held and plans were drawn up for the rebuilding of these Hospitals. This work was given first priority and the first block of buildings was started in the latter part of 1948. This block which will accommodate 225 beds—a larger number than the entire accommodation available in the present Lady Ridgeway Hospital—is expected to be ready in the early part of next year.

When completed, this Hospital will have a total of 750 beds. The Administration Block and Out-Patients' Department will be facing Baseline Road and these buildings will occupy in addition to the present premises those now occupied by the Home for Incurables, the Police Hospital and the Pasteur Institute.

As no accommodation is available for the Nursing Staff, the bungalows opposite the present Hospital are to be acquired and steps have already been taken to acquire Zion House where some of the Nurses are residing at present.

Lady Havelock Hospital: 4,638 patients, inclusive of 205 paying patients, were treated during the year with a mortality rate of 2.1 per cent. The daily average was 102 with a bed strength of 46.

349 surgical operations were performed with a mortality rate of 1 per cent.

An Honorary House Officer was appointed in 1947.

Lady Ridgeway Hospital: 7,904 children were treated during the year with a mortality rate of 17 per cent. The daily average was 227 with a bed strength of 141.

657 surgical operations were performed with a mortality rate of 9 per cent.

An Anaesthetist was appointed in 1946.

V. D. Wards.—779 patients were admitted for treatment with a mortality rate of 0.9 per cent. The daily average was 52. The bed strength being 40.

Out-Patients' Department.—There were 92,982 cases with 180,011 visits. This Department has grown out of all proportion.

Professional Staff—

(1) A Medical Officer in administrative charge of all the Institutions with 76 beds in the Lady Ridgeway.
(2) Visiting Physician and Gynaecologist.
(3) Professor of Medicine with a ward in the Lady Ridgeway.
(4) Professor of Surgery with a ward in the Lady Ridgeway.
(5) Two permanent House Officers.
(6) Three Honorary House Officers.
(7) Four Medical Officers at the Branch.
(8) One Anaesthetist.
(9) One House Officer approved in Estimates but not yet appointed.

Nursing Staff—

(1) A Matron.
(2) Three Nursing Sisters (Temporary).
(3) Two House Keepers.
(4) Sixteen passed Nurses.
(5) Twenty-two Temporary and Emergency Nurses.
(6) Forty-four Swabhasha Pupil Nurses.
(7) Twelve Pupil Nurses from the Training School.

Admissions—

In the Lady Havelock and the Lady Ridgeway Hospitals there were 12,227 new admissions besides 315 remaining over from the previous year:

Women	4,638	(205 paying patients.)
Children	7,904	

Daily average:

Havelock	102
Ridgeway	227

In the Branch Hospital there were 779 new admissions besides 38 remaining over from the previous year:

Total	817
Daily average	52

In the Out-Patients' Department there were 92,982 cases and 180,011 visits.

Surgical Operations—

Havelock 349
Mortality Rate 1 per cent.
Ridgeway 657
Mortality Rate 9 per cent.

Total Deaths—

In the Lady Havelock and the Lady Ridgeway there were altogether 1,472 deaths:

Havelock 97
Mortality Rate 2.1 per cent.
Ridgeway 1,367
Mortality Rate 17.0 per cent.
Branch 8
Mortality Rate 0.9 per cent.

(iii)—DENTAL INSTITUTE

There was no dental treatment given to the public by the Medical Department prior to 1925. Surgical treatment such as the extraction of teeth and the opening of abscesses was performed by the Medical Officers in hospitals and even by Apothecaries in charge of dispensaries.

In August 1925 dental treatment was given in a room in the out-patients department of the General Hospital with a few dental instruments at that time. The treatment consisted mainly of extractions and minor oral surgical operations. Dental treatment was scaling of teeth and insertion of filling of a temporary nature in small cavities.

The Dental Institute in Colombo was opened in 1927. Since then dental clinics have been started in Galle (1931), Kandy, Jaffna, and Batticaloa (1938), Kurunegala, Badulla and Kegalle (1939), Panadura, Kalutara and Moratuwa (1941), and Negombo (1944).

The Dental Institute caters to all patients who come from all over the Island.

The staff engaged in the work comprises—

One Medical Officer in charge,
One Visiting Dental Surgeon,
An Additional Dental Surgeon,
Five Dental House Surgeons in training in addition to the nursing staff, attendants and labourers.

The Dental Institute was planned to acommodate four Dental Surgeons. Now there are nine Dental Surgeons working in this place.

With a view to modernise the work the Institute has been divided into oral surgical department, extraction department, conservation and filling department, children's department and mechanical department. The departments are each in charge of Specialists in these subjects.

In 1948 the children's department was expanded by a preventive section in charge of Dental Hygienists. The Dental Hygienist system inaugurated in New Zealand has been modified and adapted to Ceylon needs.

Table XIV—Number of Patients treated from 1927 to 1948

Year	*No. of Patients*	*Year*	*No. of Patients*
1927	9,990	1938	28,579
1928	11,893	1939	35,114
1929	13,755	1940	36,639
1930	14.815	1941	34,477
1931	12,133	1942	26,400
1932	16.931	1943	29,970
1933	19,899	1944	29,466
1934	19.684	1945	28,454
1935	27.973	1946	30,502
1936	26,513	1947	29,902
1937	25,198	1948	31,075

These figures show that a large number of persons are taking to modern scientific dental treatment.

CLASSIFIED STATISTICS, 1948

(A)—*Adults.*

New patients	29,226
Subsequent visits	28,344

(B)—*Children:*

New patients	1,849
Subsequent visits	823

1. *Anaesthetic Section:*

Chloroform was administered to 172 patients.
Nitrous oxide and oxygen was administered to 457 patients.

2. *Surgical Section:*

(A) *Adults:*

Extractions	27,591
Dental cysts	24
Dressings	17,565
Scalings	3,440

(B) *Children:*

Extractions	1,835
Scalings	99
Dressings	486

3. *Conservation Section:*

Filling	3,105

4. *Radiological Section:*

X-ray cases	503
Application of infra red rays	3,020

5. *Appliance Section:*

Splints made for fractured jaws	8
Plates for holding radium needles	12
Dentures supplied	126

6. *Patients Section:*

590 paitients were admitted from the Dental Institute to the beds reserved for dental cases, Nos. 2 and 19 wards of the General Hospital.

Dental Institute—Total figures for 1948:

31,075 Patients, including children, were treated during the year. The total number of visits made by the patients is 60,242.

The number of patients were made up as follows:—

1.	Outdoor patients—adults	50,410
2.	Children attending the school clinic	2,672
3.	Indoor patients attending for dental treatment from the General Hospital	7,160
		60,242

Collections:

	Rs.	c.
Outdoor collection including dentures	761	0

A pressing problem associated with dental work is that of Buccal Cancer. The figures are as follows:—

TABLE XV—INCIDENCE OF CANCER DURING THE LAST TEN YEARS

Year	*Buccal Cancer*	*Cancer in Other Organs*	*Total*	*Percentage of Buccal Carcinoma*
1938	414	527	941	44
1939	507	600	1,107	46
1940	445	427	872	51
1941	496	568	1,064	47
1942	460	524	984	47
1943	481	662	1,143	42
1944	654	755	1,409	46
1945	708	869	1,577	45
1946	1,063	1,217	2,280	47
1947	1,091	1,210	2,301	47

1948—Total number of cases of—

Cancer	2,344
Buccal cancer	1,130
Cancer of other organs	1,214
Percentage of Buccal Cancer	48·2

Buccal Cancer :

Cheek	743
Tongue	168
Palate and tonsil	27
Jaw	81
Floor of mouth	10
Pharnyx and Larnyx	80
Lip	21
	1,130

Buccal Carcinoma is a preventable disease if oral hygiene is insisted on and betel chewing is reduced.

In-patients admitted during the last four years—

1945	454	1947	653
1946	498	1948	590

(iv) THE VICTORIA MEMORIAL EYE HOSPITAL

In January, 1901, on the death of Queen Victoria, arrangements were made to perpetuate her memory. The then Principal Civil Medical Officer, Sir Allen Perry, who had been engaged in Ophthalmic work during his service, together with the late Dr. W. H. de Silva worked enthusiastically when the principal subscribers advocated the establishment of an Eye Hospital.

Before that time there was existing the Grenier Eye, Ear, Nose and Throat Infirmary with an allotment of beds in the General Hospital which had been instituted by public subscription in honour of Sir Samuel Grenier, a distinguished Ceylonese lawyer, who was Attorney-General at the time of his death.

The popularity of that Institution and the frequent calls on the services of Sir Allen Perry and Dr. W. H. de Silva justified the expectation that an Eye Hospital would be of great service to the country. The building was planned on the Hindu Saracenic Style to give it an oriental touch; the pillars and wall plates were of pure Kandyan design.

On the April 2, 1906, work commenced with Sir Allen Perry as Consulting Surgeon, Dr. W. H. de Silva as Honorary Visiting Surgeon, and Dr. A. Nell as Resident Surgeon.

The Out-Patients and In-Patients Departments became crowded in a few months, mainly because of the kind and skilled treatment and the effective work at the Institution.

The accommodation provided was for four individual Paying Wards, and two wards for Males and two wards for Females. In addition to these there were two large Male General wards with twelve beds each, a Female Ward of twelve beds and an adjoining ward with six cots for children. The large space of ground reserved for the hospital proved useful a few years later when the late Mr. J. S. W. de Soysa donated the De Soysa Ward in memory of his mother, Lady De Soyza, in addition to Out-Patients' Ophthalmic Departments in the Galle and Kandy Civil Hospitals.

On the death of Dr. W. H. de Silva in 1907, Dr. Nell became Surgeon-in-Charge and Dr. H. P. Joseph who was working in the O. P. D. in Colombo was appointed Resident Surgeon. Dr. Joseph subsequently organized and worked the Galle and Kandy Ophthalmic Institutes. On Dr. Nell's retirement in 1924, after 17 years of meritorious service, Dr. Joseph succeeded him followed by Drs. Arndt and Seneviratne, and the present holder of the post.

Staff: During the year 1948 there were the following officers:—

(1) Surgeon-in-charge.
(2) Two Visiting Surgeons.
(3) Refractionists—There were no permanent refractionists, but this work was done by the three House Surgeons.
(4) Matron.
(5) Three House Surgeons.
(6) Two Apothecaries.
(7) Laboratory Assistant.
(8) Four Hospital Clerks.
(9) One Steward.
(10) Overseer.
(11) Twenty Nurses.

There were a few changes during the year. The number of House Officers is barely sufficient to cope with the ever increasing volume of work which this Institute is called upon to do.

The Nursing Staff consists of a Matron and twenty Nurses; all the nurses are temporary: of that number nine are qualified whilst the others are temporary emergency nurses.

To help in the administrative work there is a Steward and four Hospital Clerks and two Apothecaries.

The Minor employees consist of—

26	Male Attendants.
20	Female Attendants.
1	Seamstress.
3	Nurses' Ayahs.
5	Cooks.
18	Latrine labourers.
7	Pantry labourers.
1	Gatekeeper.
4	Orderlies.

1 Hall Porter.
1 Office Orderly.
1 Barber.
2 Watchers.

The work done at the Institution may be considered under the following headings:—

(1) Out-Patients' Department.
(2) In-Patients.
(3) School Clinics.
(4) Visiting of the Leper Asylum.

(1) *Out-Patients' Department.*—The Out-Patients' Department is incorporated in the main Hospital of which it forms one section. It is open daily except Sundays from 8 a.m. to 11 a.m. The patients are attended to by the Visiting Surgeons with their respective House Officers, the Visiting Surgeons being on duty on alternate days. A large number of Railway personnel is examined daily. The number of patients treated at the Out-Patients' Department was 99,562 which gives a daily average of 272 as compared with 92,039 patients in 1947 with a daily average of 252.

The affection of the eyes for which out-door treatment is sought is chiefly catarrhal conjunctivitis, corneal ulcers, and a very common affection known as Keratitis superficial tropica which is peculiar to the tropics and is due to a filterable virus and is intractable to treatment.

Besides these there are cases of Iritis, Cataract, Injuries, Glaucoma and Tumours.

(2) *In-Patients.*—There are seven wards and the number of beds is 128 of which seven are for paying patients: first class 3, and second class 4. The accommodation is totally inadequate for the number of patients treated, Wards with 12 beds having as many as 100 patients. The number of In-patients is increasing daily as shown by the following figures:—

	1946	*1947*	*1948*
Total number of patients ..	3,478 ..	3,786 ..	4,535

(3) *School Clinics.*—A school clinic is conducted by the Visiting Surgeons with the assistance of the Refractionists and House Surgeons. The total number of first visits to the clinic was 459.

The chief diseases treated at the clinic are:—

Blepharitis.
Conjunctivitis.
Follicular Conjunctivitis.
Vernal Conjunctivitis
Phlyctenular Conjunctivitis.
Superficial Keratitis Tropica.

Errors of Refraction comprise the largest number, the vast mapority were Myopias. Hypermetropia was less common in comparison with Myopia.

Of the cases of Astigmatism practically twice the number were Myopic Astigmatism.

(4) *Visiting of the Leper Asylum:*

A monthly visit to the Leper Asylum is paid by the Visiting Surgeons alternatively. The total number of cases treated was 332.

The chief affections are Scleritis and Leucoma. There were also cases of Iritis, Iridocyclitis, Catarrh and Conjunctivitis.

Operative Surgery.—There was a total of 2,134 operations performed by the three Surgeons.

Table XVI—Statement of Major Operations Performed at the V. M. Eye Hospital During the Year 1948

Extraction of Cataractous Lens : (*a*) In capsule— (1) without Iridectomy (2) with partial Iridectomy (3) with total Iridectomy (*b*) Extra capsular— (1) without Iridectomy (2) with partial Iridectomy (3) with total Iridectomy (*c*) Linear Extraction of Lens	1,006
Needling of capsule	427
Removal of capsule	1
Needling of lens	256
Curette evacuation	5
Preliminary Iridectomy	8
Corneal Scleral Trephaning	27
Glaucoma Iridectomy	10
Optical Iridectomy	56
Excision of prolapsed Iris	30
Stroking down of Iris	—
Enucleation	39
Magnet extraction of Intra-ocular foreign body	4
Extirpation of Lachrymal Sac	45
Plastic operation of lids	22
Removal of foreign body of cornea	4
Evisceration	11
Removal of epibulbar growths	26
Diathermy	—
Sclerotomy	—
Staining of cornea	—
Intra orbital abscess	2
Iridectomy	5
Other operations not classified above	150
	2,134

Table XVII—Indoor Statistics for the Year 1948

Kerotomalacia	15
Optic Atrophy	32
Leucoma	128
Muco Purulent Conjunctivitis	73
Subjunctival Ecchymosis	3
Interstitial Keratitis	11
Macular Keratitis	67
Chronic Iritis	16
Acute Iritis	37
Cyclitis	14
Panophthalmitis	11
Central Choroiditis	3
Herpes Opthalmia	3
Retinitis Pigmentosa	27
Endophthalmitis	4
Trachoma	5
Chronic Conjunctivitis	137
Emmetropia	197
Phthisis Cornea	98
Cataract	1,581
Keratitis Superficialis Tropica	342
Iridocyclitis	56
Acute Conjunctivitis	261
Presbyopia	126
Orbital Cellulitis	2
Hypermetropia	43
Congestive Glaucoma	4
Secondary Glaucoma	54
Cataract with Glaucoma	12
Corneal Abscess	2
Lac. Abscess	8

Blepharitis	32
Acute Dacryocystitis	7
Chronic Dacryocystitis	11
Optic Neuritis	12
Follicular Conjunctivitis	7
Retinoblastoma	3
Scleritis	3
Staphyloma	7
Corneal Ulcer	270
Ptosis	3

(V)—INFECTIOUS DISEASES HOSPITAL

The present Infectious Diseases Hospital, situated in the Village of Kalapaluwawa, Angoda,—seven miles from Colombo, was opened on February 19, 1926. The grounds cover an area of 58 acres. Prior to this the I.D.H. was in Bullers Road, Colombo. The Hospital consists of the larger section for the minor Infectious Diseases and another section for Small-pox and Cholera. There are 17 wards with 192 beds and 108 rooms for contacts. There are two wards with 24 beds in the course of construction and one of the House Officer's quarters has been converted temporarily into a temporary emergency Air Passengers' Ward. The I.D.H. serves the whole Island in general and Colombo District in particular. All cases of Infectious Diseases, both major and minor are treated.

The staff consists of one Medical Officer in charge, a House Officer, two Apothecaries, one Matron, six nurses, one Steward, one Overseer, one Hospital Orderly, a Boilerman, 34 Male and Female Attendants, 30 Labourers, 3 Watchers, 3 Gatekeepers, 4 Cooks and a Laundry Contractor who is expected to stay inside the Hospital premises. The staff is inadequate. The quarters are ready for an additional House Officer and a Laboratory Assistant.

Cases Treated:

(*a*) *Typhoid*.—There was an increase in the number admitted and treated. 21 cases as against 10 during the previous year, with 2 deaths.

(*b*) *Typhus*.—One case admitted and treated.

(*c*) *Diptheria*.—165 cases as against 84 of last year with four deaths. Of these cases most came from Nugegoda, Dehiwala and Dematagoda.

(*d*) *Chicken-pox*.—1,562 cases treated as against 1,070 of the previous year.

(*e*) *Acute Poliomyelitis*.—36 cases were admitted and treated, with four deaths. This was the first time that such cases were admitted to this Hospital.

(*f*) *Enteritis*.—864 cases were admitted and treated as against 315 in the previous year. There were 24 deaths, as against 33 deaths the previous year.

(*g*) *Small-pox*.—There were seven cases of Small-pox with one death.

Total number of cases treated for last year was 3,586 with 59 deaths as against 3,151 of the previous year with 113 deaths.

The amount of drugs used was more than that of the previous years. For Diphtheria Penicillin was given. For Dysentery and Enteritis more Sulpha drugs were used with encouraging results.

(VI)—MEDICAL RESEARCH INSTITUTE

The work of the Medical Research Institute showed steady progress during the year.

In January, a Specialist Officer was appointed to the Department of Biochemistry. This enabled all biochemical work to be brought under one department; it also helped in the better planning of work and the training of staff.

In October, the appointment of a Specialist Officer in Entomology was made.

The work which is being carried out at present in this Institute may be classified into three groups: routine laboratory examinations for the hospitals in Colombo and outstations, routine laboratory examinations for Health Units, and Research.

The routine work has shown a steady increase. In addition to laboratory work inoculations against yellow fever, typhoid and paratyphoid fevers, cholera, plague and typhus have been undertaken.

It has not been possible for the Medical Research Institute to curtail any of the routine work in connection with laboratory tests which it carries out for the curative and preventive sections of the Medical Department owing to the absence of other suitably equipped Laboratories.

Certain investigations have been carried out during the course of the year. These have yielded some useful information and have in addition served the purpose of training staff and acquainting them with research methods.

In accordance with the scheme of training of staff for this Institute a Medical Officer was sent abroad for training in Bacteriology and another in Pharmacology. A Laboratory Assistant was trained in medical laboratory work in India during the course of the year.

The institute has been less fortunate in its building programme. A suitable site for expansion has not yet been obtained.

Division of Bacteriology

Routine.—The routine work of the Department of Bacteriology has been increasing progressively. In spite of this it has been possible to maintain a high standard.

Serology Section

Blood for Wasserman reaction	7,753
Blood for Kahn reaction	7,753
Blood for Henry's test	15
Blood and Cerebro-Spinal Fluid for Wasserman reaction	43,596
Blood and Cerebro-Spinal Fluid for Kahn reaction	43,596
Blood for Standard Agglutination	7,996
Blood for Widal	1,570
Blood for Gonococcal Fixation Test	1,875
Blood for clot culture	7,996
Blood for Weil Felix reaction	7,493
Aldehyde Test for Kala Azar	59,343
Cerebro Spinal Fluid for Wasserman Reaction	29
Blood and Cerebro Spinal Fluid for Cardiolecithin Test	26,340
Faeces for B. Typhosus	777

Clinical and Public Health Bacteriology.

Blood for culture	239
Vaginal and cervical swabs for culture	1,118
Urine for culture	1,851
Cerebro-Spinal and Puncture fluids	678
Rectal swabs	83
Nasal and throat swabs	5,372
Faeces and other specimens from L. I. H. in connection with the epidemic of diarrhoea	484
Specimens for leprosy	2
Dressings for sterility tests	51
Rice, dhal and flour for culture	81
Tinned food for culture	60
Faeces for culture	109
Catgut for absorption and sterilty test	3
Air Sterility tests in Operating Theatre, General Hospital	10
Rat for B. Pestis	1
Other specimens	262

V. D. Specimens.

Number of smears examined for Gonococci	9,886
Number positive for Gonococci	568
Number negative for Gonococci	9,318
Number examined for Treponema pallida	65
Number of cultures for Gonococci	20
Smears for Spirillum minus	2
Number of smears for Spermatozoa	35
Serum for Treponema carateum	2

Water Samples.

Number of water samples examined	717
Number showing faecal pollution	308

Mycology Section.

Number of cultures made during the year	65

Blood Plasma Section.

Number of bottles of blood received	231
Number of bottles of blood discarded	27
Amount of filtered plasma	7,200 cc

Vaccine Section.

T. A. B.—Balance on December 31,1947	22,162 cc.
Prepared during the year	383,400 cc.
Issued during the year	379,086 cc.
Balance on December 31, 1948	26,476 cc.
Cholera—Balance on December 31, 1947	69,183 cc.
Prepared during the year	38,500 cc.
Issued during the year	58,529 cc.
Balance on December 31, 1948	49,154 cc.
G. C. Vaccine issued	2,726 cc.
Plague Vaccine issued	2,116 cc.
Auto-Vaccines prepared and issued	68 sets
Sterility tests	836

Investigation and Research:

(*a*) *Diphtheria Investigation.*—This investigation has been continued. The biological strains of C. diphtheriae isolated from throat swabs from different parts of Ceylon have been studied.

The following are the results so far obtained:—

104 cases:
1 Intermedius:
103 Mitis

(*b*) *Cardiolipin Test for Laboratory Diagnosis of Syphilis.*—A new flocculation test which has been reported to be satisfactory for the diagnosis of syphilis has been investigated. This test is simpler than either the Wasserman or the Kahn reaction, and if found satisfactory, will enable a large number of samples of blood to be tested daily.

The following are the results so far obtained:—

W. R. Results

(*Known syphilitis cases examined for the first time.*)

Reaction	0	±	+	+
Number	57	8	32	260
Per cent.	16·0	2.2	9·0	72·8

Total number of specimens examined	357
Number positive	300
Per cent. positive	84

Kahn Results

(*Known syphilitis cases examined for the first time.*)

Reaction	0	+	++	+++ & over
Number	62	4	72	219,
Per cent.	17·4	1·1	20·2	61·3

Total number of specimens examined	357
Number positive	295
Per cent. positive	82·6

Cardiolipin Results

(*Known syphilitis cases examined for the first time.*)

Reaction	0	+	++	+++ & over
Number	42	16	120	179
Per cent.	11·8	4·5	3·4	50·0

Total number of specimens examined	357
Number positive	315
Per cent. positive	88·2

W. R. Results

(Syphilitic cases undergoing treatment.)

Reaction	0	±	+	++
Number	653	78	147	437
Per cent.	49·7	5·9	11·2	33·2

Total number of specimens examined	1,315
Number positive	662
Per cent. positive	50·3

Kahn Results

(Syphilitic cases undergoing treatment.)

Reaction	0	+	++	+++
Number	630	55	297	333
Per cent.	47·9	4·2	22·6	25·3

Total number of specimens examined	1,315
Number positive	685
Per cent. positive	52·1

Cardiolipin Results

(Syphilitic cases undergoing treatment.)

Reaction	0	+	++	+++ & over
Number	463	89	322	441
Per cent.	35·2	6·8	24·5	33·5

Total number of specimens examined	1,315
Number positive	852
Per cent. positive	64·8

W. R. Results

(Results of non-syphilitic cases.)

Reaction	0	±	+	++
Number	872	73	84	75
Per cent.	79·0	6·6	7·6	6·8

Total number of specimens examined	1,104
Number positive	232
Per cent. positive	21·0

Kahn Results

(Results of non-syphilitic cases.)

Reaction	0	+	++	+++ & over
Number	989	18	72	25
Per cent.	89·6	1·6	6·5	2·5

Total number of specimens examined	1,104
Number positive	115
Per cent. positive	10·4

Cardiolipin Results

(Results of non-syphilitic cases.)

Reaction	0	+	++	+++ & over
Number	944	30	83	47
Per cent.	85·5	2·7	7·5	4·3

Total number of specimens examined	1,104
Number positive	160
Per cent. positive	14·5

Summary of Results

(Known syphilitic cases examined for the first time)

(Bloods positive for various tests)

Total	*W. R.*	*Kahn*	*C. L.*	*W. R. and K.*	*W. R. and C. L.*	*K. and C. L.*
357	300	295	315	286	285	289
	84·0	82·6	88·2	80·1	79·8	81·0

The above are the results of the serological tests carried out in this laboratory or the diagnosis of syphilis. The results obtained for Cardiolipin tests compare avourably with the results of the other two tests, Wasserman Reaction and ahn Reaction.

(c) *Improvement of technique in serological tests for syphilis.*—In the usual technique of the Wasserman and Kahn tests the serum of the patient is inactivated by treating for half an hour at 56°C. A new technique has been adopted which gives similar results when the serum is inactivated at 60°C for three minutes. This effects a considerable saving of time in carrying out the tests.

The results of the investigation are given below:—

W.R. Results

Inactivation		Reaction	0	±	+	++
Temp.	*Time*					
56°C	30 min.	Number	633	55	87	292
		Per cent.	59·2	5·2	8·2	27·4
60°C	3 min.	Number	643	47	86	291
		Per cent.	60·2	4·4	8·1	27·3
Total number of specimens examined						1,067

Kahn Results

Inactivation		Reaction	0	+	++	+++ & over
Temp.	*Time*					
56°C	30 min.	Number	800	66	184	83
		Per cent.	68·7	6·2	17·3	7·8
60°C	3 min.	Number	794	73	190	83
		Per cent.	67·6	6·8	17·8	7·8
Total number of specimens examined						1,067

Division of Virus Diseases

Pasteur Institute.—The increased incidence of rabies has resulted in an increased attendance of patients seeking advice and Pasteur treatment. This has necessitated an increased production of anti-rabic vaccine.

Vaccine was issued to the following outstation centres:—

Kandy, Nuwara Eliya, Kurunegala, Ratnapura, Jaffna, Negombo, Kalutara, Galle, Matara, and Batticaloa.

Anti-rabic vaccine prepared during 1948	613·5 litres
Anti-rabic vaccine issued for use outside the Institute	290·5 litres
Daily average attendance	99
Number of inoculations against Typhoid, Cholera and Plague	6,254
Number of inoculations against Yellow Fever	550

Examination of Dogs' brains—

Province	*Positive*	*Negative*	*Unfit*	*Total*
Western	291A	198B	78F	567
Central	41	42	22G	105
Sabaragamuwa	10	14C	20H	44
Uva	1	1	1	3
Northern	6	3	3	12
North-Western	15	9D	15 I	39
North-Central	4	2	4	10
Southern	14	5E	9J	28
Eastern	—	—	3	3
	382	274	155	811

A—includes 2 cats
B—includes 7 cats, 1 goat, 1 cow and 1 pig
C—includes 1 cat
D—includes 1 jackal
E—includes 1 human
F—includes 4 jackals
G—includes 1 human
H—includes 1 human
I—includes 1 human
J—includes 1 goat

The work of the Pasteur Institute has steadily increased. The numbers attending the out-patient clinic and seeking in-patient treatment have been high. The demands for anti-rabic vaccine from outstation hospitals have also been high.

Calf Lymph Establishment.—The work of the Calf Lymph Establishment has been maintained as before. No batch of lymph is released for general issue until it has satisfied all tests for purity and potency carried out on rabbits and confirmed by vaccination and inspection of primary cases at the vaccine stations in Colombo District.

As there is no Therapeutic Substances Act in Ceylon these tests are based on the standards adopted by other countries. The calf lymph issued during the course of the year has been on the whole very satisfactory and of a very high standard.

Balance of lymph on December 31, 1947 ..	2,389,018 doses
Lymph prepared during 1948	747,992 ,,
Lymph issued during the year	660,068 ,,
Balance on December 31, 1948	2,476,942 ,,

Virus Diseases Research

Vaccinia.—Preliminary work on the passage and adaptation of vaccina virus on the chorio-allantoic membrane of the developing chick embryo commenced in December, 1947, was continued in 1948, but for want of a regular supply of eggs and proper facilities for this work the investigation had to be discontinued.

Poliomyelitis.—An experimental laboratory investigation was commenced on material from cases of poliomyelitis during the epidemic which broke out in the middle of 1948.

Processed faeces from five patients was inoculated into rhesus monkeys.

Two of the monkeys developed typical signs of poliomyelitis infection.

Inoculation of the spinal cord from the first monkey into other monkeys was attempted with a view to keeping the strain of virus in passage. The result was unsuccessful, probably due to the infected animal being sacrificed too late in the illness.

The Professor of Pathology who examined sections from the cervical and lumbar regions of the cord of the second monkey reported typical pathological appearances of poliomyelitis.

Portions of this cord have been preserved in glycerol in cold storage for further investigation.

Division of Biochemistry

Routine Preparations—

Preparation	*Quantity issued*
Meat Digest	13,000 oz.
Yeast Extract	2,633 ,,
Desiccated hog's stomach	44 ,,

Chemical Estimations on Blood Samples :

Examination	*Number Examined*
Blood calcium	1
Blood urea	5
Blood sugar	58
Sugar tolerance	5

Inquiries :

1. Four samples of maize were sent by the Assistant Land Commissioner re a project to incorporate maize flour in bread. These were analysed for moisture, carbohydrate, fat and protein.

2. A sample of "pokkali" rice from the Food Controller was sent for analysis. This variety thrives on the brackish soil at Muthurajawela. This was assayed for moisture, fat, carbohydrate and protein.

3. Several samples of dhal were sent by the Food Controller for a report on their fitness for human consumption. These were analysed and found to be cyanide free but contained a saponin with haemolytic properties. A saponin concentrate from the dhal was fed to a rabbit which did not exhibit any serious symptoms even for several days.

4. A sample of milk was analysed for water and fat contents.

5. A report on the food value of coconut was prepared on request.

6. A sample of a strain of yam was sent by Mr. A. Dias for a report on its fitness for human consumption.

7. The Food Yeast Committee appointed by the Hon. the Minister for Agriculture and Lands requested us to prepare toddy yeast and have it analysed. Samples were brought from a distillery and the yeast was centrifuged at the Physiology Department, University of Ceylon, and dried; a sample was sent to Nutrition Research Laboratories in Coonoor for vitamin assay.

Exhibitions.—This department took part in the Health Exhibition and the Science Exhibition of the Ceylon Association of Science.

Original Investigations :

1. *Fish Bone as a source of Food Calcium:*

The possibility of rendering the bone of small and large fish friable was investigated since such processing would make the calcium of treated bone available to the consumer. Attention was chiefly directed to small fish, particularly those in which the bony structure is distributed throughout the body. The Director of Fisheries kindly undertook to deliver the fish at the Institute. Pressure cooking was found to be the most successful method of rendering the bone friable and the cooking period was proportional to the quantity of fish. For a pound of fish, 25 to 30 minutes cooking under a pressure of 35 pounds was adequate. Seven species of fish were investigated including Surapara (*a Carangid*-Mackerel), Meevatiya (*Lethrinus Karwa*-Seabream), Bedewa (*Lutianus Rivulatus*—blue-spotted snapper), Kalameeya (*Pristipomoides Typus*), Vaikka (*Chanos Chanos*—Milkfish), Lavaya (*Epinephelus Morrhua*—Rock Bass), Jeela (*Sphyraena, sp. Barracouda*). The work indicated that pressure cooking could be used with advantage in institutions like hospitals, boarding schools, &c.

2. *Microbiological method of preparing Calcium Lactate and Calcium Gluconate:*

Since these pharmaceutical preparations are widely used this investigation was started to find out whether these could not be made with local sources of raw materials. At a certain stage of the investigation, lack of suitable apparatus prevented the completion of the investigation. The work will be started as soon as the apparatus is obtained.

3. *Iodine Estimation of Food and Water:*

In conjunction with the Nutrition Division which is carrying out a goitre survey of the Island, iodine estimations of food and water collected at different areas were carried out. The results were unsatisfactory due to the unreliable methods of iodine estimations. A close study of the existing methods was made including dry and wet combustion methods, and with the apparatus available it was not possible to obtain consistent results even on the same sample.

4. *Insulin and Shark Pancreas:*

It has been reported that shark pancreas is used for insulin preparation and that this pancreas yielded more insulin than a corresponding weight of beef pancreas. With the co-operation of the Director of Fisheries a preliminary study of the shark pancreas was made. The fact was confirmed that shark pancreas is unique in that the islet tissue containing insulin was quite separate from the zymogenous tissue and it could be easily separated from the latter mechanically. In the histological examination of the pancreas Dr. V. Sivalingam's assistance was secured.

5. *Stability of Vitamin C in fruit juices:*

Since the cost and availability of fruits rich in Vitamin C fluctuate according to season, the possibility of preparing fruit juices at the height of the season and thus making this vitamin available at a reasonable cost throughout the year was investigated. The stability of the vitamin in fruit juices on storage was the main problem and established facts on this problem had to be supplemented by further investigations.

The comparative stability of the vitamin in oranges, limes and tomatoes was studied under the following sets of conditions:—

(*a*) Preservative added and stored at room temperature.
(*b*) Preservative added and stored in refrigerator.
(*c*) No preservative added and stored in the refrigerator.
(*d*) No preservative added and stored at room temperature.

In all cases the preservative used was potassium metabisulphite. Estimations were carried out over a period of five months, at first daily and latterly at longer intervals. It was found that

(*a*) low temperature favoured vitamin stability:
(*b*) vitamin was most stable in orange juice and least stable in lime juice.

Attempts were then made to determine the stabilizing factor in orange juice. The pigments of the juice were extracted and were found to have no influence as a stabilizer. The effect of reducing acidity of lime juice to that of orange juice was more effective in increasing stability of vitamin in lime juice and this aspect is being closely studied.

The effect of concentrating the fruit juices was studied, using freeze-drying and vacuum evaporation at different temperatures. Vacuum evaporation at room temperature to a syrupy consistency was the most satisfactory process. The vitamin was more stable in these concentrates. Thus in the syrup the loss of vitamin was 6 per cent. as compared with 36 per cent. in the unprocessed juice under the same conditions. Freeze drying was uneconomical. Freezing out the water in the juice was also tried but was unsatisfactory since a large part of the vitamin separated out with the ice.

6. *The stability of pure Vitamin C:*

The stability of Vitamin C in 2 per cent. oxalic acid, 3 per cent. metaphosphoric acid and 7 per cent. citric acid was studied. While the vitamin was very stable in 2 per cent. oxalic acid and 3 per cent. metaphosphoric acid for a month, its stability in the latter decreased more rapidly for longer periods. Vitamin C disappeared within a week from the citric acid solution.

7. *Indigenous Drugs:*

The efficacy Ayurvedic and indigenous drugs in the treatment of diabetes was studied. A recent accurate method of blood glucose estimation has been used in this investigation.

The drugs were fed orally by stomach tube to rabbits which were fasted for at least twelve hours before drug administration, and blood samples were taken from the ear vein at half-hourly intervals for a period of three hours and in one instance for five hours. Each drug was tried on at least five rabbits and the dose was progressively increased if earlier experiments gave negative results. In one instance a diabetic volunteered to take a drug under investigation, but carried on only for a week during which his fasting blood glucose remained high.

None of the five preparations tested produced any significant drop on the blood glucose of the normal fasting rabbit although one had a slight reducing effect at the end of three hours. It is now proposed to use rabbits with experimental diabetes produced by the action of alloxan.

Other drugs studied were Adhathoda Vasica, Solanum Trilobatum and Gammalu Bark. Mini-Mal (*Vinca rosea*) was also investigated during the latter part of the year. The results are incomplete and work on these will be continued.

8. *Papers, Publications, &c.*

Mr. R. L. Wickremasinghe read a paper at the Fourth Annual Sessions of the Ceylon Association of Science—on " The stability of Vitamin C in fruit juices ".

Dr. A. A. Hoover read a paper before the Chemical Society of Ceylon on " The Biochemistry of Fermentation."

Dr. A. A. Hoover read a paper before the University Chemical Society on " Diabetes—Its chemical aspects."

Division of Parasitology

The work of this Division consisted of research, investigation and routine examination of clinical material. The investigation into the amoebic carrier state of an apparently healthy population was continued on the same lines as during the last year. The total number of persons examined during the year was 273. The number of specimens of their stools examined for amoebae was 209. The number of persons who showed a positive result for the amoebic infection was 58 giving a percentage of 21.

The examination of blood smears for the Filariasis Survey conducted by the Department was carried out only during the first nine months of the year. In October the work was taken over by the Medical Officer in charge of the Survey and the examinations were made in his own laboratories. The number of blood smears examined during the nine months was 3,845 with 267 positives for microfilaria, giving an average percentage of 6.9. This percentage however does not reflect the true picture of the prevalence of filarial infection; for the localities from which the bloods were obtained were far scattered, and some areas gave a negative result, while others gave positive to the extent of 20 per cent. All the positives were *M. bancrofti*.

Examination for mites in sputum in the investigation carried out by the Physician in charge of the Asthma Clinic, Out-Patients Department, General Hospital, Colombo, was done in this Department. Thirteen cases were examined with two positives and the mites were very scanty. In one case the W. B. C. count was 12,200 with 18 per cent. eosinophiles and the mite seen was unidentifiable. The second one had W. B. C. 7,800 with 26 per cent. eosinophiles and the mite belonged the genus Tyroglyphus. This investigation has now been stopped as no relationship between mites, asthma and eosinophilic count has been found in the examinations conducted by this Division.

The routine examinations carried out during the year are shown below:

Blood films for malaria parasites	820
Blood films for microfilaria	114
Faeces for amoebae, cysts and ova	3,998
Faeces for hookworm ova count	389
Faeces for culture for amoebae	205
Faeces for ova only	1,803
Faeces and fluids for flagellates	23
Sputum for mites	1
Pus for culture for amoebae	1
Tape worms for identification	2
Skin scrapings from animals in Dehiwala Zoo for parasites	1
Brain for section for malaria parasites	1

Clinical Pathology Section

Routine:

Urine for chemical examination	6,917
Urine for microscopical examination	6,917
Blood—	
Total white blood cell count	221
Total red blood cell count	77
Haemoglobin percentage	58
Blood picture	29
Differential count	390
Sputum for T. B. microscopical	3,281
Sputum for T. B. culture	377
Guinea pig inoculation	5
Smears for B. leprae	28

Investigations

Haematology.—With a view to ascertaining the normal range of variation of the figures for haemoglobin, total white and red blood cell counts, differential count and cell volume of the population a survey has been undertaken.

This work commenced in July, 1948, and 95 samples of blood have been examined. It is our intention to carry out a complete haematological study of 5,000 persons and to make a statistical analysis of the figures obtained.

The results obtained on the 95 specimens were as follows:—

> Haemoglobin determined according to Sahli was found to vary from 50 per cent. to 90 per cent. Red blood cell count varied from 4½ million to 6 million per cubic centimeter of blood.
>
> The total white blood cell count varied from 3,400 to 15,600 per cubic centimeter of blood.
>
> The distribution of cells in the differential count was as follows:—

Polymorphonuclear leucocytes varied from	20%–76%
Lymphocytes	78%–18%
Eosinophiles	32%– 0%
T. cells	17%– 0%
Monocytes	6%– 0%
Basophilis	2%– 0%

Cell volume according to Wintrobe's haematocrit method varied from from 40 to 50.

Blood Grouping.—This work is been done as part of the haematological survey stated above.

The ABO and sub-groups determined were as follows:—

Group O	32
Group A—sub-group A_1	15
sub-group A_2	1
Group B	16
Group AB	6

Supplies of dried Rh serum arrived regularly and Rh blood grouping was undertaken as part of the haematological survey and as a special examination for the Professor of Obstetrics and Gynaecology and the Maternity Hospital. Of the 182 samples of blood examined for this factor, eight were found to be negative. Serum for determining the Rh sub-types was not available in sufficient quantity to meet our requirements. Arrangements have been made to send samples of blood by air to London for this work.

Nutrition Division

Routine work:

1. *Examination of Foods.*—Examination of food samples from the Food Controller were as follows:—

	Examined	*Passed as fit*	*Unfit*
Rice samples	135	125	10
Flour samples	32	25	7

2. *Nutritional Surveys in Schools.*—Eight schools were examined as follows:—

1. Ratmalana Deaf and Blind School.
2. Pothupitiya Sinhalese Mixed School.
3. Gamini Mixed Vidyala Boys, Ingiriya.
4. Talwatta Boys School.
5. Girls School, Kumbukka.
6. Government School, Bandaragama.
7. Sinhalese Mixed School, Pothupitiya.
8. Gamini Mixed Vidyala Girls, Ingiriya.

Total population examined 1,086

Signs of Malnutrition	*Number*	*Percentage*
Phrynoderma	29	2·67
Bitot's spots	26	2·4
Erosion of tongue	7	0·64
Angular stomatitis	14	1·29
Total defective	76	7·0

3. Rural dietary surveys were carried out with a staff of five Sanitary Inspectors.

Eight surveys were carried out as follows:—

	Place	*M. O. H's Area*
1.	Udugama	Ambalangoda
2.	Talwatta	Polgahawela
3.	Gohagoda	Harispattu
4.	Talaimannar	Mannar
5.	Tholpuram	Valigamam West
6.	Koholana	Kalutara
7.	Merawela	Chilaw
8.	Padeniya	Dambulla

The results obtained are given below:—

TABLE XX

Foodstuffs consumed in ounces per consumption unit per day

Foodstuffs	*Udugama*	*Talwatta*	*Gohagoda*	*Talaimannar*	*Tholpuram*	*Koholana*	*Merawela*	*Padeniya*
Country rice (home pounded)	2·8	6·0	4·9	10·4	5·0	1·7	0·4	1·0
Imported rice (par-boiled)	4·0	4·6	5·5	2·2	9·3	9·5	9·7	8·4
Rice and flour preparations	0·1	1·0	0·1	0·8	1·4	0·5	1·4	0·4
Bread	5·1	0·2	2·3	0·0	1·3	3·5	1·0	4·8
Wheat whole-meal	—	—	—	—	—	—	—	—
Wheat flour	3·2	0·8	0·1	0·2	0·0	0·2	1·6	1·9
Kurakkan	—	—	—	—	—	—	—	0·4
Meneri	—	—	—	—	—	—	—	—
Maize	—	—	—	—	0·0	—	—	—
Barley	0·0	0·0	—	—	—	—	—	—
Total cereals	15·2	12·6	12·9	13·6	17·0	15·4	14·1	16·9
Potatoes	0·6	0·5	0·1	0·0	0·1	0·3	0·1	0.4
Local Yams	2·5	2·5	0·9	1·3	2·4	1·4	0·9	1.2
Roots and tubers	3·1	3·0	1·0	1·3	2·5	1·7	1·0	1·6
Pulses	1·2	0·1	0·7	0·0	0·1	0·5	0·1	0·3
Leafy vegetables	1·2	0·8	0·6	0·0	0·4	1·0	0·7	0·7
Vegetable fruit	1·2	1·1	1·4	0·8	1·2	0·9	1·1	1·7
Jak and breadfruit	1·2	6·7	4·6	—	0·0	0·1	0·1	0·1
Gourds and pumpkins	0·7	1·7	0·5	0·2	0·3	0·2	0·3	0·5
Total vegetables	4·3	10·3	6·1	1·0	1·9	2·2	2·2	3·0
Ripe fruits	0·1	0·2	0·1	0·0	0·0	0·1	0·1	0·1
Fresh fish	0·1	0·0	0·0	6·4	2·8	1·1	3·2	0·1
Dryfish	0·8	1·1	0·7	0·7	—	0·9	0·4	0·6
Crabs and prawns	—	—	—	0·2	0·7	0·0	0·3	—
Chicken	—	—	—	0·0	—	—	—	—
Meat	0·0	0·0	—	—	0·1	0·1	1·0	0·2
Flesh foods	0·9	1·1	0·7	7·3	3·6	2·1	4·9	0·9
Eggs	0·0	0.0	0·0	0·0	0·0	—	0·0	—
Milk and milk products	0·7	0·7	0·9	0·2	0·4	0·3	0·3	0·1
Coconut oil	0·1	0·1	0·1	0·1	0·0	0·0	0·0	0·1
Coconut	3·1	4·8	3·6	4·0	3·1	2·4	2·9	2·5
Other nuts and seeds	—	0·7	0·0	—	—	—	—	—
Sugar	1·4	1·3	1·6	2·3	2·1	1·4	2·1	2·2

TABLE XIX

Constituents of the daily diet per consumption unit

	Udu-gama	*Tal-watta*	*Goha-goda*	*Talai-mannar*	*Thol-puram*	*Koho-lana*	*Mera-wala*	*Pade-niya*
Total proteins *g*	66·3	63·3	54·7	85·2	63·2	62·3	69·5	57·7
Animal proteins *g*	15·7	17·7	12·6	46·5	20·3	21·1	31·1	11·4
Total fats *g*	46·8	73·6	50·6	58·3	42·8	34·5	41·7	37·4
Animal fats *g*	2·2	2·2	1·7	3·1	1·9	1·9	3·4	1·3
Carbohydrates *g*	390	386	358	392	454	381	392	416
Energy calories	2,265	2,483	2,134	2,480	2,485	2,100	2,257	2,236
Calcium *g*	0·4	0·5	0·3	0.2	0·2	0·3	0·2	0·2
Phosphorus *g*	0·9	1·0	0·9	1·1	1·0	0·9	0·9	0·8
Iron mg	17·6	22·8	19·7	14·8	15·1	15·8	13·6	14·8

TABLE XX

Incidence of Phrynoderma, sore mouth and Bitot's spots

	Udu-gama	*Tal-watta*	*Goha-goda*	*Talai-mannar*	*Thol-puram*	*Koho-lana*	*Mera-wala*	*Pade-niya*
Phrynoderma	17	9	16	1	8	5	3	8
Sore mouth	1	2	9	1	5	—	9	7
Bitot's spots	10	2	4	—	—	1	1	—
Number affected	28	13	29	2	13	6	13	15

TABLE XXI

General Particulars

	Udu-gama	*Tal-watta*	*Goha-goda*	*Talai-mannar*	*Thol-puram*	*Koho-lana*	*Mera-wala*	*Pade-niya*
No. in family	5·2	5·8	5·6	5·2	4·6	5·3	5·0	4·1
No. of consumption units	4·1	4·5	4·0	3·9	3·6	4·1	3·7	3·1
No. of children 12 years and under	1·6	2·0	2·5	2·0	1·4	2·0	2·2	1·5
Cash value of daily diet per consumption unit in Rs. and Cts.	57	46	44	70	55	49	52	49

4. *Lectures, Propaganda, &c.*

The following lectures were given:—

(1) Post Graduate Nurses :	
Number of nurses	11
Number of lectures	4
(2) Colonization Officers :	
Number of officers	6
Number of lectures	2
(3) Rural workers, Lanka Mahila Samiti :	
Number of workers	25
Number of lectures	6

Visitors.—Dr. Peng Cheng Hsu, Nutrition Expert from FAO at Washington, was shown the activities of the Nutrition Section, including a dietary survey which was in progress in Dambulla.

Health Week.—A stall on nutrition was put up.

Investigations and Research

1. *Incidence of Endemic Goitre.*—Twenty-one villages in various parts of the Island were surveyed for endemic goitre. Schools and clinics in these areas were also surveyed wherever possible. For details see the tables below. The Eastern Province has yet to be surveyed and when completed a full report will follow.

As an experiment a dozen rats were kept in a house at Wetara. Goitre is endemic in this area. The inmates of this house too had goitre. These rats are being fed the same food as is partaken of by the inmate. At present there are four generations of rats. The conditions of their thyroids will be reported on in due course.

Iodine estimations of water and vegetables from the areas surveyed had to be abandoned due to lack of a satisfactory and reliable method of estimation.

(1) Total number of surveys carried out 21
(2) List of areas surveyed :

	Place	*M. O. H's Area*
1.	Udugama	Ambalangoda
2.	Talwatta	Polgahawela
3.	Bandaragama	Horana
4.	Ingiriya	Horana
5.	Gohagoda	Harispattu
6.	Talaimannar	Mannar
7.	Pothupitiya	Panadura
8.	Diyagama	Panadura
9.	Kirinde	Gampola
10.	Udowita	Gampola
11.	Kalugamuwe	Gampola
12.	Etul Kotte	Kotte
13.	Buthgamuwa	Kotte
14.	Bope	Padukka
15.	Udumulla	Padukka
16.	Uluvitike	Four Gravets, Galle
17.	Wattareka	Four Gravets, Galle
18.	Tholpuram	Valigamam West
19.	Koholana	Kalutara
20.	Merawela	Chilaw
21.	Padeniya	Dambulla

	Males	*Females*	*Total*
Total population examined	12,970	12,279	25,249
Goitre cases	18	242	260
Percentage of goitre cases	0·14	1·97	1·03

TABLE XXII—Incidence of Goitre in Villages

Place	*M. O. H's Area*	*Population* *Males*	*Females*	*Total*	*Goitre Cases* *Males*	*Per Cent.*	*Females*	*Per Cent.*	*Total*	*Per Cent,*
Udugama	Ambalangoda	524	507	1,031	—	—	6	1·18		0·58
Talwatta	Polgahawela	235	237	472	—	—	—	—	—	—
Bandaragama	Horana	646	659	1,305	—	—	20	3·03	20	1·53
Ingiriya	Horana	1,513	1,270	2,783	4	0·26	55	4·33	59	2·12
Gohagoda	Harispattu	614	528	1,142	1	0·16	5	0·95	6	0·53
Talaimannar	Mannar	166	138	304	—	—	—	—	—	—
Pothupitiya	Panadura	1,437	1,395	2,832	3	0·21	39	2·80	42	1·48
Diyagama	Panadura	459	404	863	—	—	5	1·24	5	0·58
Kirinde	Gampola	429	459	888	2	0·46	9	1·96	11	1·25
Udowita	Gampola	293	294	587	—	—	—	—	—	—
Kalugamuwa	Gampola	463	404	867	—	—	1	0·25	1	0·12
Etul Kotte	Kotte	1,492	1,452	2,944	—	—	18	1·24	18	0·61
Buthgamuwa	Kotte	694	611	1,305	—	—	14	2·29	14	1·07
Bope	Padukka	752	742	1,494	—	—	15	2·02	15	1·0
Udumulla	Padukka	355	341	696	—	—	8	2·35	8	1·15
Uluvitike	Four Gravets, Galle	767	801	1,568	2	0·26	23	2·87	25	1·59
Wattareka	Four Gravets, Galle	696	734	1,430	6	0·86	21	2·86	27	1·89
Tholpuram	Valigamam West	647	598	1,245	—	—	2	0·33	2	0·16
Koholana	Kalutara	276	283	559	—	—	1	0·35	1	0·18
Merawela	Chilaw	286	267	553	—	—	—	—	—	—
Padeniya	Dambulla	226	155	381	—	—	—	—	—	—

Incidence of Goitre in School

School	*Number Examined* *Males*	*Females*	*Total*	*Cases* *Males*	*Per Cent.*	*Females*	*Per Cent.*	*Total*	*Per Cent.*
Talwatta	114	126	240	—	—	—	—	—	—
Bandaragama	—	180	180	—	—	4	2·22	4	2·22
Ingiriya	94	61	155	—	—	4	6·56	4	2·58
Pothupitiya	164	125	289	1	0·61	1	0·80	2	0·69
Total	372	492	864	1	0·27	9	1·85	10	1·16

Survey in Ante-natal Clinic, Bandaragama

Total examined	61
Goitre cases	10
Percentage	16·39

Hospital Diets.—A Diet Committee was appointed on October 20, 1947. The Committee consisted of the following:—

Dr. A. Nimalasuria, Director, Medical Research Institute—Chairman.
Professor P. B. Fernando.
Professor M. A. Paul.
Dr. J. R. Blaze, O.B.E., Senior Physician.
Dr. K. Mahadeva, Medical Research Institute—Secretary.

Five meetings were held during the year. All hospitals in Ceylon were written to and the officers in charge were requested to send in their views on dieting and these were considered. The following hospitals were visited:—

General Hospital, Colombo.
Kalutara Hospital.
Tangalla Hospital.
Hambantota Hospital.
Lady Havelock Hospital.
Lady Ridgeway Hospital.
Chilaw Hospital.
Puttalam Hospital.
Anuradhapura Hospital.
Kurunegala Hospital.
Kandy Hospital.
Gampola Hospital.
Nuwara Eliya Hospital.
Kotagala-Dimbulla Hospital.
Avissawella Hospital.
Jaffna Hospital.
Point Pedro Hospital.
Kankesanturai Hospital.
Chavakachcheri Hospital.
T. B. Hospital, Kankesanturai.
Leper Asylum, Hendala.
Mental Asylum, Angoda.

The diets at the above hospitals were inspected and recommendations for improvement were discussed with the officers in charge.

The final report was submitted on November 13, 1948.

Diets of Agricultural Camps.—The diet and nutrition of the labourers in the Agricultural Camps were inspected and a report submitted.

The following camps were examined:—

Ridiyagama Camp
Bakamuna Camp
Senapura Camp
Puliyankulama Camp

Signs of Malnutrition	*Incidence*	
	No.	*Percentage*
Phrynoderma	1	0·09
Bitot's spots	33	3·12
Erosion of tongue	10	0·95
Angular Stomatitis	30	2·84
Total	74	6·99
Total examined	1,058	

Diets of Industrial Homes and Schools.—The diet and nutrition of the pupils in Industrial Homes and Schools were inspected and report submitted.

The following were examined:—

Kandana Girls Industrial School.
Seeduwa Boys Industrial School.
Boys Industrial Home, Maharagama.
Girls Industrial School, Kehelwatta.

Signs of Malnutrition	*Incidence* No.	*Incidence* Percentage
Phrynoderma	10	3·92
Bitot's spots	1	0·39
Erosion of tongue	—	—
Angular stomatitis	5	1·96
Total	16	6·27
Total examined	255	

Report on the Fresh Milk Distribution Scheme in Dumbara.

The fresh milk distribution centre in Dumbara area was inspected and a report submitted.

An Experiment in School Feeding.—An experiment was carried out at Talwatta Boys School to try out the effect of supplementing the mid-day meal. The children were divided into four groups and records kept of their height and weight, &c., at intervals of four months over a period of one year.

One group was kept as the control and given sweetened lime juice.

The second group was given dhal soup containing half ounce dhal per person.

The third group was given dhal and yeast soup containing half ounce of dhal and quarter ounce of yeast per person.

The fourth group was given skim milk containing one and half ounces of skim milk powder and twelve ounces fluid per person.

It was found that the group fed on skim milk was superior to the other groups. The weight increases were greatest in the skim milk group at the end of four and eight months. The weight increases were greatest in the dhal and yeast group at the end of twelve months. The height increases were greatest in the skim milk group at the end of the fourth month, whereas the height increases were greatest in the dhal and yeast group at the end of eight and twelve months.

IV—MENTAL CARE

(A) Mental Hospital, Angoda: The care and custody of lunatics and persons of unsound mind was placed in the Statute Book on January 9, 1873. Thereafter, several amendments have been made to modernize the law relating to the subject from time to time and the latest revision was in February, 1940. The Lunacy Ordinance as it now stands is yet obsolete when compared with the advances made in Psychiatry.

The present Mental Hospital was located at Torrington Square, Colombo, till January 1926 when it was transferred to Angoda in view of the over-crowding and antiquated buildings. In 1938, the services of Professor Edward Mapother, M.D., F.R.C.S., was availed of to make recommendations to the Government for the reorganization of treatment of mental patients. As a result of his report, the general principle of the creation of a separate grade of Medical Officers devoted to Psychiatry was accepted in principle and finally implemented by the Salaries Committee of 1946. Among other recommendations made by Professor Mapother and accepted by Government were the establishment of

(*a*) a Neuro-psychiatric Clinic;
(*b*) a Psychopathic Hospital;
(*c*) a Criminal Lunatic Asylum;
(*d*) modernization of the law relating to Lunacy;
(*e*) granting of facilities to Medical Officers at Angoda to familiarize themselves with modern trends in Psychiatry in Europe and India;
(*f*) special training of male and female nurses for service in Mental Hospitals; and
(*g*) education of medical students and post-graduates in the special treatment of mental defectives, &c.

Prior to 1938, this institution was known as the "Lunatic Asylum." With the reorganization proposals of Professor Mapother the name of the institution too was changed to " Mental Hospital," thereby giving a new outlook as well as an assurance to the public that mental ailment is a disease for which treatment can be had in Hospital. Since then rapid progress has been made in the treatment of persons and the most modern methods of treatment such as Insulin Shock-therapy, Electro-convulsive therapy, Corosol therapy, Cardiazol therapy and Prefrontal leucotomy, &c., are being carried out on a limited scale due to the lack of trained staff and other facilities. The latest addition to the Electrical treatment centre is an Electro-encephelograph for the recording of brain waves and diagnosis of epilepsy, &c. Two treatment Centres are provided in the Hospital to house the appliances needed for the treatment and more accommodation is necessary for the provision of further treatment centres.

Another method of treatment is by Occupational Therapy whereby patients are employed in various industries and occupations such as cloth weaving, mat weaving, lace work, basket work, coir work, rattan work, Dairy Farm work, Pig Farm work, cultivation of land, routine domestic work in wards, &c. Another aspect for the welfare of patients is the provision of out-door and indoor recreational facilities such as Tennis, Volley Ball, Cricket, Football, Badmington, Table Tennis, Chess, Cards, &c. Music is provided for the patients by the installation of a central amplifier connected on to 12 loudspeakers in 12 wards. Monthly cinema shows and regular treats on festival occasions are also given to the patients. The funds for these items of expenditure are met from the sale of garden produce and from the profits of various industries which are credited to a " Treat Fund ". Two recreational halls—one for males and the other for females—have been provided and daily newspapers, periodicals, magazines, musical instruments, &c., are supplied for the use of patients. Some of the magazines and periodicals are donated by a Colombo Firm and by certain public-spirited ladies and gentlemen. A canteen, where goods such as sweets, biscuits, tooth paste, perfumery, chocolates, tin food, &c., and soft drinks such as ice cream and aerated waters are available, has been provided for the benefit of patients, visitors and staff.

Of the recommendations of Professor Mapother, the Department has so far implemented the proposal to create a Psychiatric Service and a Neuro-Psychiatric Clinic at the General Hospital, Colombo. It would therefore be seen that what has so far been carried out is only a part of Professor Mapother's recommendations.

In 1944, a branch of this Hospital was opened at Pelawatta in temporary buildings put up for the purpose and 60 patients who could engage themselves in agricultural work were transferred there. A good deal of pioneer work was done by them in bringing a vast area of land, which was a thick jungle, under cultivation. The Pelawatta Mental Hospital will in the future scheme of work be devoted to agricultural work by mental patients.

So far no provision has been made or laws promulgated for the care and treatment of mentally defective children in Ceylon. A beginning has, however, been made with the establishment of a Child Guidance Clinic at the General Hospital, Colombo. This would form the nucleus for the proposed Home for Mentally Defective Children.

Since the Mapother's report in 1938, the Department has been in search of a suitable site for a Psychopathic Hospital for the treatment of early cases and finally arrangements have been made to acquire a 100-acre site at Mulleriyawa, Angoda, which is about three miles from this institution.

Staff.—The medical staff at this institution consists of a Medical Superintendent, two qualified Psychiatrists and four other medical officers for a patient population of about 3,000.

The Nursing Staff consists of one Matron, six qualified nurses and ten temporary nurses in the female section and one male Head Overseer with eleven untrained male overseers in charge of the male section.

There are two Psychiatric Social Workers in the Department of whom one is under training in England and the other is attached to the Child Guidance Clinic. Provision for more Psychiatric Social Workers is necessary if intensive treatment is to be carried out.

The various grades employed in this Hospital comprise the following:—

1 Medical Superintendent.
6 Medical Officers.
1 Secretary.
8 Clerks, G.C.S.
4 Clerks H.C.S.
2 Female Ward Clerks.
1 Matron.
16 Nurses.
2 Apothecaries.
1 Head Overseer.
11 Assistant Overseers.
324 Male Attendants.
168 Female Attendants.
41 Cooks.
1 Hospital Orderly.
4 Barbers.
2 Boilermen.
3 Nurses' Ayahs.
1 Nurses' Cook.
1 Rattan Worker.
11 Night Watchers.
2 Office Orderlies.
1 Seamstress.
5 Burial, Labourers.
1 Matron's Servant.
1 Labourer, Matron's Quarters.
22 Conservancy Labourers.
2 Dairy Farm Labourers.
1 Dairy Farm Manager.
1 House Keeper, Nurses Quarters.
1 Textile Weaving Demonstrator (loaned by Industries Department).

Work done.—The following table indicates the admissions, discharges and deaths of the Mental Hospital and of the House of Observation:—

MENTAL HOSPITAL CERTIFIED PATIENTS

	Males	*Females*	*Total*
Remained on December 31, 1947	1,215	495	1,710
Admitted in 1948	1,325	1,377	2,702
Total treated in 1948	2,540	1,872	4,412
Discharged in 1948	866	719	1,585
Died in 1948	180	75	255
Remained on December 31, 1948	1,494	1,078	2,572

HOUSE OF OBSERVATION

Remained on December 31, 1947	358	389	747
Admitted in 1948	1,448	1,191	2,639
Total cases observed	1,806	1,580	3,386
Discharged in 1948	233	71	304
Died in 1948	86	51	137
Transferred to M. H.	1,325	1,377	2,702
Remained on December 31, 1948	162	81	243

During the year under consideration, 2,702 patients were admitted to Hospital and 2,639 to the House of Observation as against 1,216 and 2,008 respectively during the year 1947. Of this number, 4,412 were treated in 1948 as against 2,457 treated in 1947. These figures therefore show a comparative increase in admission and treatment of patients. The number of certified cases discharged during the year was 1,585 as against 375 during the year 1947. This number includes patients discharged on probation for six months, partially cured and completely recovered. Of the patients admitted to the House of Observation, 304 patients were discharged as of sound mind as against 996 during the year 1947.

PATIENTS REMAINING IN HOSPITALS AT THE END OF LAST THREE YEARS

	Males	*Females*	*Total*
1946	1,402	771	2,173
1947	1,573	884	2,457
1948	1,656	1,159	2,815

PATIENTS DISCHARGED AS RECOVERED

	Males	*Females*	*Total*
(*a*) Certified patients	581	420	1,001
(*b*) Uncertified patients	233	71	304

The uncertified patients were discharged as recovered by the District Judge as they were of sound mind. Credit is due to the untiring efforts of the two Psychiatrists and the four Medical Officers attached to this Hospital for the increased number of patients discharged as recovered. The present Insulin Therapy Ward is quite inadequate to accommodate all the patients who need treatment and now the treatment is carried out in batches.

The deaths and causes of deaths are given below:—

DEATHS

Certified patients	255
Patients under observation	137

DEATHS AND CAUSES

Dysentery	29
Anaemia and general debility	76
Gastritis, Entritis and Colitis	215
Other causes	72
Total	392

During the year under review there were 392 deaths among the inmates of the Hospital and the House of Observation as against 467 during the year 1947. Colitis is the major cause of a good number of deaths although there was an appreciable reduction in the mortality during the current year. In view of the chronic overcrowding and the bad sanitation, particularly in the male section, where untrained staff is employed, the number of deaths due to bowel diseases is large. With the provision of better facilities for housing of patients and the appointment of trained personnel, the mortality among mental patients in Hospital should decrease to a great extent.

Incidence of infectious diseases:—

	Cases	*Deaths*
Dysentery	99	29
Typhoid fever	23	9
Phthisis	67	54
Chicken-pox	377	—

(B) Neuro-Psychiatric Clinic:—The establishment of a Psychiatric Clinic in Colombo was considered an urgent need by Professor Mapother in his Report of 1938. The Clinic was to provide both for in-patients and out-patients. This proposal was implemented by inaugurating such a clinic in June 1943, at the Khan Memorial Ward for children. The ground floor of the building was given for the purpose. The accommodation though unsuitable for psychiatric work, lacking the necessary privacy for discussion of intimate problems of patients, was accepted owing to the urgent necessity to make a beginning of this work. Sessions were held bi-weekly and the Clinic continued to function in these premises until 1947—in this year the Out-Patients' Department of the General Hospital, Colombo, was partially removed to Regent Street and a room was placed at the disposal of the Clinic. This accommodation though still inadequate was preferable. Since then the work has been done here as an out-patient clinic.

Staff.—The staff consists of a Medical Officer of the Mental Hospital, Angoda, who visits on specified days, a pupil nurse from the Nurses' Training School and a labourer.

Work Done.—

Number of Sessions	150	
First visits		297
Subsequent visits		529
Total		826

Phychoneurosis:

Anxiety state	36
Hysterical state	28
Obsessional	4

Psychosis:

Schizophrenia		73
Maniac Depression		75
Epilepsy		24
Personality Disorder		4
Toxic Confusion		17
Organic Syndromes		15
Mental defective		3
Sound mind		18
Referred by Visiting Staff		62
Referred by Medical Board		65
Electro-Convulsive Therapy		27
Recoveries	18	
Improved	8	
Abandoned	1	
	27	

Comparative Figures of Attendance, 1943-48

	Number of Sessions	*Total Number of Visits*
1943	55	147
1944	100	275
1945	102	315
1946	102	458
1947	113	490
1948	150	826

The above figures indicate the steady and progressive increase in the number attending the Clinic and are an index of the increasing utilization of the services by the Public.

Many members of the Visiting Staff of the General Hospital, Colombo, Presidents of Medical Boards, and on a few occasions the Magistrates of Colombo and Government Departments have referred cases for advice and report. In 1948, the installation of an Electro-Convulsive Therapy apparatus has enabled out-patient treatment to be afforded with this method in suitable cases. Narco-hypnosis is also another method tried not for exciting repressed material but for suggestive therapy. Facilities for admission to the Mental Hospital Angoda, in cases unsuitable for out-patient treatment are also provided by the issue of necessary certificates for production at the District Court held weekly at Angoda. This has been of considerable service as relatives find this method more convenient than to have these patients admitted through the Village Headmen and the Police.

Summary.—A short summary of the salient features of the work done at the Clinic could be given in C. P. Blacker's own words. "The Psychiatric Clinic should be regarded as a centre of social psychiatry rather than a place with purely medical functions. A Government Department may want an opinion on a compensation case: how much is the present disability really attributable to the injury? A report on the man's mental state and history may be as important as an opinion on his physical condition. A general practitioner may be puzzled as to how far psychological factors play a part in the symptoms complained of by a patient. The Superintendent of a Mental Hospital may want a patient discharged as recovered to be kept for a time under observation. The Medical Officer of a factory may be concerned about the mental state of an opinion on a doubtful case. So may an official at an Employment Exchange. Vocational or forensic advice may be sought. Various voluntary and charitable organizations may have similar problems. A Magistrate may be doubtful about the mental condition of a person charged with some offence. Is he to be regarded as of normal mentality? A properly organised and equipped Psychiatric Service could fill these and other needs."

The functions as defined above have been carried out to a greater or lesser extent. With the increase of requisite staff, equipment, and beds for in-patients, the Clinic could be made to be of the greatest benefit to the country.

(C) Child Guidance and Young People's Clinic: The Child Guidance Clinic was started on September 30, 1947, at the General Hospital Out-Patients' Department, Regent Street. The Clinic aims at the promotion of Mental Health and the prevention and treatment of early manifestations of mental disorders and behaviour problems.

The presence of the Clinic was known only to a few and even the Medical Officers of the General Hospital made little use of it for a start. Cases were received from a few persons known to the Psychiatrist, or to the social worker and these were mainly confined to the educational institutions in Colombo. The early months were also used to draw up Intelligence Tests with a Ceylon background.

The Clinic started with a Psychiatrist and a Social Worker. It functions every morning (except Sundays) and the Psychiatrist visits it twice a week on Tuesdays and Thursdays from 2 p.m. to 4 p.m.

In conducting a clinic of this nature we are confronted with various problems arising in the young from stammering and educational maladjustments to Epilepsy and frank Psychoses. In handling these cases the Team method has to be adopted for the harmonious adjustment of the child's personality as a whole. Each case presents different problems and it has to be individually studied from different angles: Social, Physical, Mental and Educational.

To study such an individual may have to pool all the information gathered from different sources at a case conference. After the case is fully discussed the Psychiatrist makes his diagnosis and plans out the treatment. The other members of the Team assist him to carry out the treatment.

The main types of cases that come to us for assistance are mental defectives, sex perverts, people suffering from obsessions, epileptics, children with speech defects and behaviour problems as stealing, lying temper tantrums, psychosomatic cases as hysterical paralysis and hypochondriacs.

Of the above types the mental defectives require the most amount of help from the state as these, like the insane are a problem to the parents lowering their earning capacity and their efficiency.

Future Programme.—When staff is available the clinic should be opened every morning for interviews with patients and parents. During this time the Social Workers fill up the dockets with all material available under the different heads and the Psychologist does the intelligence testing and gives a preliminary survey of educational difficulties. On three afternoons every week the Psychiatrist has a case conference on the patients thus examined and gives directions regarding treatment.

The second interview with the Psychiatrist can be made by appointment so that patients need not wait for treatment. Electric Convulsion treatment and Narco-Analyses have to be undertaken by the Psychiatrist and as the cases progress. patients can interview the Psychiatrist who will check up the progress and give necessary adjustments.

When an Electro-Encephalogram is available tracings should be done as routine. A part of the time of the staff should be made available for research work.

Already two School Medical Officers were shown and instructed at the clinic and those Medical men interested in Psychology may help in the clinic by spending part of their time in helping in research work.

When the clinic is well established it may be called the Psychological Clinic where all early cases of mental abnormality can be treated. The main features should be—

(*a*) Guidance of children through instructions to parents and through Play Therapy.
(*b*) Intelligence Testing; the Schools could be advised as to the capabilities of their problem pupils.
(*c*) Treatment of Epileptics; Encephalograph Recording for purposes of research can be taken.
(*d*) Treatment of early mental cases with E. T. C.
(*e*) Assisting Juvenile Courts with reports.
(*f*) Assisting probation officers with reports and instructions.
(*g*) Treatment of Psycho-somatic cases as Hysterical Paralysis.
(*h*) The clinic should have six beds attached to it for observations and treatment of cases from outstations or from Colombo that deserve hospitalisation.

ANALYSIS OF CASES FOR 1948

Cases	*Number*
Mental Defectives	44
Maladjusted to Environment	68
Personality Disorders	59
Epileptics	20
Speech Defectives	18
Sex Problems	17
Psychotic Cases	3
Total	229

VISITS

Patients' visits for observation, Psycho-Therapy, Play therapy or Medical Attention	550
Visits to Home, School or place of work	151

V—PREVENTIVE MEDICINE AND HYGIENE

The main feature of Public Health work, apart from the special campaigns such as those for the control of Malaria, Tuberculosis, Venereal Diseases, Leprosy, Filariasis, &c., is the adoption of the Health Unit type of work throughout the country. In this method of work a full time Medical Officer of Health, who is debarred from private practice, is placed in charge of all the health activities within a limited area. He is assigned a subordinate staff of Public Health Nurses, Sanitary Inspectors, Public Health Midwives and minor personnel, all assessed on a population and geographical basis. Sanitary Inspectors and Public Health Nurses are appointed on the basis of one per eight to ten thousand and Public Health Midwives at the rate of one per four to five thousand of the population. A Health Unit of approximately 50,000 population will, therefore, have a Medical Officer of Health in charge, four to five Sanitary Inspectors, and eight to ten Midwives. A large proportion of the subsidiary personnel is available now except for Public Health Nurses who are still in very short supply.

The activities of a Medical Officer of Health in charge of a Health Unit comprise the following six routine items of work:—

(i) Administration,
(ii) Collection and Study of Vital Statistics,
(iii) Environmental Sanitation,

(iv) Epidemiology,
(v) Maternity & Child Welfare including School Health Work,
(vi) Health Education.

The work in all the Health Units is carried out in a uniform manner so that officers who are transferred from one area to another have a continuity of method of work.

By arrangement with the Local Authorities, Medical Officers of Health are provided by the Central Government, free of any financial commitment except the cost of travel within the area of the local authority.

Sanitary Inspectors and Public Health Nurses are paid by the Local Authority on a partial basis, the recruitment being from a Central Government pool which ensures a uniformity of work and a possibility of transfer from one area to another.

Midwives are paid in full by Urban Councils and on a full or subsidized basis by the smaller authorities.

In the case of special campaigns the work of specialist officers, such as the Superintendent, Anti-Malaria Campaign or the Superintendent of Tuberculosis Campaign, is carried out in a particular area through the Health Unit organization so that officers of the Health Unit become part and parcel of the special campaign that is instituted.

(A) SANITATION

(i) WATER SUPPLY, DISPOSAL OF EXCRETA, &c.

Except for the three Municipal Health Areas of Colombo, Kandy and Galle, the other sanitary areas were served by Government Medical Officers of Health and Sanitary Inspectors of this Department. In the Urban Council areas of which there are 40 in the Island the Sanitary Inspectors engaged are, with few exceptions, officers of this Department whose services have been loaned to the Councils and a part of whose salaries and other emoluments are met by them. In respect of the Inspectorate there has not infrequently been found an insufficiency of staff for the due performance of necessary duties in the rural areas. Additional staff has been appointed in such areas as the result of representations made but under present conditions it has not always been possible to secure the appointment of all the staff needed.

Inspection of the Sanitary conditions of rural areas reveals abundant scope for improvement in environmental hygiene. In several districts, this work is being pursued energetically by the Sanitary Inspectors with a "Rural Scheme of Sanitation" which lays stress on five elementary Sanitary items, viz.,

(i) Adequate ventilation of the dwelling,
(ii) Boiling of water before consumption,
(iii) Sanitary latrine,
(iv) Compost making, and
(v) Kitchen Garden for each individual premises.

Housing conditions and supervision of licensed and offensive trades premises have presented the main problem in urban areas, both as regards insufficiency of accommodation and the structural conditions of property. In this latter respect there has been a manifest improvement in supervision and in the effecting of repairs after the neglect of years of war conditions, but sufficient activity and zeal have not been found in the case of some local authorities. The number of Departmental Sanitary Inspectors and their distribution is as follows:—

1. No. of Sanitary Inspectors:

		Total
Urban Councils	67	
Town Councils	24	
Village Committees	444	
Seconded for Service under Hydro-Electric Scheme	1	
		536

2. No. of Sanitary Inspectors doing specialized work:

Quarantine	4	
Anti-Malaria	34	
Filariasis	4	
Dietary Survey	5	
V. D.	3	
T. B.	2	
Port Commission	2	
		54
Grand total		590

(a) WATER SUPPLY

Three Municipal Councils, 16 Urban Councils, 4 Town Councils and 43 other areas are having pipe-borne water supplies. Of these 43 areas one is supplied by the P. W. D. (Board of Health, Diyatalawa), 28 by Village Committees and the rest draw their water from supplies developed by private bodies. Though 2 other Village Committees commenced work to construct pipe-borne water supplies during 1947, the work in this connection has not yet been completed. With the creation of a sub-department for water works, under the Public Works Department, during the year under review, a vigorous policy in the provision of pipe-borne water supplies to larger sections of the population is expected with increasing budgetary provision annually. The report of the Sanitary Engineering Division in another section of this report shows the work undertaken by that division in this connection. Questions of interest on which Medical advice has been sought include filtration and preliminary purification of water, sterilization with chlorine and the methods of prevention of pollution of water supplies derived from underground sources. Majority of the pipe-borne town supplies were subjected to periodical bacteriological examinations. Seven hundred and seventeen samples from all sources were bacteriologically examined and of these 308 samples showed evidence of pollution as to render same unsafe for drinking purposes. One hundred and forty-five samples were chemically examined.

Loan funds were made available to local authorities in a few areas for the construction of public wells.

Number of wells, &c.	*1948* Existing	*1948* Newly built
Public wells	4,267	123
Private wells	202,250	743
Springs and Spouts	2,549	2

Inspection of Water Supplies 1948

	Public Wells	*Private Wells*	*Springs and Spouts*
Number found defective	2,319	79,935	1,057
Number Improved: (*a*) Partially	389	4,508	18
(*b*) Radically	58	961	5

(b) DISPOSAL OF EXCRETA

The abolition of the bucket system of conservancy adopted in some urban area is desirable in the interests of public health as this method is coincident wit a high incidence of bowel diseases. This is not possible without sewers and water Moreover with the present system the final disposal of excreta in some of th populous urban areas without suitable lands for trenching has created a larg problem. Not a few of the Local Authorities are compelled to spend a goo portion of their revenue in the final disposal of the night soil collected from dwellings. The Urban Councils of Dehiwala-Mount Lavinia and Kolonnaw on the outskirts of the Colombo Municipality have to face the problem ver acutely. Plans for sewage treatment plants for these Authorities are in cours of preparation by the Sanitary Engineering Division. During 1948 construction of latrines for private premises progressed satisfactorily as compared wit that in the previous year.

Table XXIII—Statement of Condition of Latrines

	1947	1948
(i) *Existing :*		
Public latrines	1,619	1,741
Private latrines	272,003	282,697
School latrines	7,445	7,609
(ii) *Latrines found Defective :*		
Public latrines	765	707
Private latrines	66,478	66,216
School latrines	2,897	3,066
(iii) *Latrines Newly Built :*		
Public latrines	113	89
Private latrines	5,570	8,191
School latrines	173	123
(iv) *Latrines Restored to Sanitary Type :*		
Public latrines	26	16
Private latrines	1,049	1,552
School latrines	234	250
(v) *Types :*		
Pit	829	1,412
Bored Hole	56	76
Mound	40	—
Pail	384	330
(vi) *Conservancy.—Disposal of night soil :*		
Number of towns composting	6	5
Trenching	204	206
Incinerating	3	6

The scheme of Government Aid to villagers who are certified poor to build private latrines benefitted a larger number than in previous years. The majority of latrines built were of the " Water Seal " pit type. In order to make this scheme still more helpful to the really indigent, the free issue of a " Water Seal " was supplemented with a bag of 1 cwt. of cement. During the year under review a sum of Rs. 52,258 was spent on subsidies for latrine construction.

(*c*) DRAINAGE

The demands made on the Sanitary Engineering Section by the local authorities for schemes of surface drainage for their areas were unprecedented. Elsewhere in this report the work undertaken by this division is set out. The length of drains newly constructed during the year was 2,350 feet in Towns and 1,300 feet in rural bazaar areas. The length of cement drains existing was 522,609 feet in towns and 167,392 feet in rural bazaars.

(*d*) SCAVENGING, DISPOSAL OF REFUSE

The subject of the disposal of refuse of towns has received further consideration. The matter was actively raised by Local Authorities who were compelled to deal with mosquito breeding places as an anti-mosquito measure in the prevention of urban filaria. Town refuse, if properly applied, has a certain value in re-claiming the low-lying march in towns. This is being done in areas of a few local authorities.

Disposal of Refuse:

	1947	1948
Number of towns Composting	13	9
Burying	79	77
Incinerating	61	62
Dumping	90	106

(*e*) SCHEME OF RURAL SANITATION

The efforts of Sanitary Inspectors working in rural areas to introduce this scheme into every village home as the minimum measures of sanitation have been encouraging. The comparative figures for 1948 and the previous year are as follows:—

	1947	*1948*
No. of houses worked	153,860	163,439
No. of new houses taken up	34,882	41,642
No. of new houses completed	11,516	10,561

The five items attended to in this scheme and the number of houses where each item was carried out are tabulated below:—

	1947	*1948*
(*a*) Compost making	32,861	33,316
(*b*) Kitchen gardens	54,677	54,722
(*c*) Boiled and cooled water	59,701	63,738
(*d*) Ventilation and light	44,901	46,494
(*e*) Latrines	5,681	18,925

(*f*) LICENSED AND OFFENSIVE TRADES

Licensing of trades has a two fold purpose. It is a revenue earning measure as far as the local authority is concerned and for this Department it affords an opportunity to approve only establishments complying with the sanitary requirements. Supervision of all places, where food is prepared, was maintained and improvements obtained in handling of food by frequent inspection.

(*i*) *Licensed Trades:*

	1947	*1948*
No. existing	23,456	28,711
No. inspected	23,287	28,426
No. of inspections made	264,643	357,716
No. of defects found	327,042	380,602
No. of defects corrected	198,977	236,270
No. improved radically	6,747	11,261

(*ii*) *Offensive Trades:*

The varieties of trades considered offensive is a growing one. Year by year either new trades as such or existing ones complained of by residents are added to the list on the advice of this Department. These have been kept under close supervision.

	1947	*1948*
No. existing	2,557	2,877
No. inspected	1,359	1,331
No. of inspections made	7,243	10,505
No. of nuisances created	1,191	1,780
No. of nuisances abated	757	1,082

(*g*) ANTI-PLAGUE MEASURES

The provisions in the Regulations require occupiers of premises not only to destroy rats, but also to take such steps as may from time to time be necessary and reasonably practicable for the prevention of rat infestation in buildings used for purposes of trade. Though there has not been a case of human plague in the country for 11 years the measures taken in the past continued unabated. Cyanide Fumigation of cargoes of grain at the ports of entry and subsequent storage in rat-proofed grain stores have been the principal defensive measures against the introduction of plague into the country. Gassing by Cyanide dust was an effective method of rat destruction in small towns, as well as by traps and poison. It is not possible to estimate the total number of rats destroyed during the year. In cases affecting dwelling houses the owners have carried out willingly the suggestions of the Department. As general prevention measures the Sanitary Inspectors have spent a part of their time in impressing on occupiers the necessity of the protection of foodstuffs, the removal of lumber and rubbish and of the proper storage and disposal of scrap food, food paper and other wrappings, organic refuse and various materials attractive to rats.

Flea surveys to determine the cheopis index have been undertaken in certain towns as the report of the Medical Entomological Division will show elsewhere.

(h) ANTI-FLY MEASURES

110,316 breeding places were found of which 93,514 were dealt with. Use of D.D.T. for the control of flies in the institutions of this Department gave disappointing results. However, the Hospitals in the city of Colombo and the neighbourhood received regular six weekly treatment with D.D.T., emulsion through a mobile unit.

TABLE XXIV—(i) SANITARY INSPECTION OF PREMISES

	Inspected	*Inspections*	*Defects*	*Defects Rectified*
(1) *Public Premises :*				
(A) Railway—				
(a) Railway Stations :				
Premises	217	3,592	1,718	978
Drains	217	3,577	1,491	1,028
Latrines	332	6,448	2,169	1,503
Urinals	221	3,632	1,060	785
Water supplies	143	2,175	428	203
(b) Bungalows :				
Premises	680	7,323	2,091	1,503
Drains	640	6,813	1,905	1,450
Latrines	860	9,227	2,758	2,057
Compounds	669	7,607	2,087	1,764
Water supplies	344	4,333	570	325
(c) Lines :				
Premises	525	6,081	3,208	2,030
Drains	536	5,836	2,703	2,003
Latrines	559	7,269	3,124	2,131
Compounds	522	5,905	2,289	1,878
Water supplies	184	2,329	433	186
(B) Other Public Premises	9,442	162,456	68,751	48,350
(2) *Private Premises*	719,986	1,452,965	941,199	805,012

(j) HOUSING AND TOWN PLANNING

The Housing and Town Improvement Ordinance has been enforced within the administrative boundaries of all local authorities other than Village Committee areas unless specially proclaimed in rural bazaar areas and brought under the operation of the ordinance.

Building Applications for—	
(a) New Buildings :	
Received	4,106
Reported as (a) Recommended	3,002
(b) Not recommended	1,104
For Additions and Alterations :	
Received	1,991
Reported as (a) Recommended	1,502
(b) Not recommended	489
For Certificates of Conformity :	
Received	1,281
Reported as (a) Recommended	1,078
(b) Not Recommended	203
(b) Insanitary Dwellings :	
Number existing	2,000
Number reported on for action	544
Number unfit for human habitation	894
Closing orders obtained	2
Improved—Voluntarily	Nil
Compulsorily	1
Demolition orders obtained	2
Demolished	1

(k) FOOD IN RELATION TO HEALTH AND DISEASE

(a) *Nutrition.*—Work done in connection with investigations on nutrition and diet of the people is recorded in the section on the Medical Research Institute.

(b) *Food Sanitation.*—The Food and Drugs Act was prepared in draft form during the year and it is hoped that this Act will get into the Statute Book in 1949. It is to the Local Authorities that the public will have to look for protection from the evils against which the Act is directed in respect of food. The Director of Medical and Sanitary Services will have the duty of administering the Act with regard to drugs. The Act in its draft form not merely affects the composition of articles of food but also defines with precision how some of them must be labelled.

Whereas the primary object was to provide protection for the consumer of food and drugs against " adulteration " and against the substitution of one article for another, the legislation now drafted on the experience of other countries, empowers the authorities to insist that Vendors shall provide, by labelling and other similar devices, information concerning quality, composition, &c., of certain foods sold. Another of the main objects of the Act is the protection of the community by the application of the principles of sanitation and cleanliness, which it incorporates regarding preparation, handling and purveying of food.

As in previous years the slaughter of animals for human consumption and control of milk supplies were the chief food sanitation activities and the work done is tabulated below:—

	1947	*1948*
Cattle—		
No. inspected	68,263	79,679
No. passed for slaughter	65,993	76,747
Goats—		
No. inspected	34,179	43,598
No. passed for slaughter	33,466	42,811
Milk Supply—		
No. of samples analysed	407	574
No. found adulterated	261	295

(ii) ESTATES MEDICAL WANTS AND HEALTH WORK

The Estate population received the same attention under the Medical Wants Ordinance (Chapter 176) as in previous years. This Ordinance confers on the estate labour privileges of state medical aid that are denied to the indigenous population in general and imposes irksome statutory obligation on the Government Medical Officers serving in estate areas. In order to do away with these objectionable features the question of amending or repealing the ordinance was considered and put in abeyance for the time being.

Since the practice of approving Estate Dispensers was stopped from the year 1935, the Superintendents of estates have found it extremely difficult to recruit suitable officers to man the dispensaries. Qualified Apothecaries who, it was thought at the time will take up these appointments, are reluctant to do so. In view of this situation and as a measure of relief to ex-Servicemen who have had experience of caring for the sick in their war work, it has been decided to resuscitate the practice of granting approvals after suitable tests, as laid down by the Council of the Medical College. An examination for this purpose will be held in 1949.

Since the report of Major Orde Browne on the living conditions of labourers on Estates in Ceylon there has been agitation on the part of bodies representing labour unions to amend the regulations framed under the Diseases (Labourers) Ordinance (Chapter 175) for housing of Estate labour.

A meeting of the planting interests and the Heads of Departments dealing with Estate labour was convened to discuss this subject. At this meeting the representatives of the Estate Proprietors with commendable unanimity agreed to provide the labourers on estates Single-roomed and Double-roomed Cottage type of houses in blocks of two and four, according to the availability of building sites, instead of lines of single rooms in blocks of twelve under the present regulations. With these cottage type houses a far reaching sanitary improvement was also agreed on in that each family was to be provided with its own individual latrine. The amendments to the regulations to enforce the provision of the new type of lines having been recommended by the Medical Wants Committee are now in its draft form receiving the attention of the Legal Draftsman.

The work carried out by this department on estates scheduled under the Medical Wants Ordinance is as follows:—

Area.—There were approximately 2,309 estates scheduled under the Medical Wants Ordinance (Chapter 176) with an approximate population of 947,367.

Staff.—

Inspecting Medical Officers (Estates)	1
Medical Officers of Health	47
Medical Officers	4

Medical Facilities.—The Government maintains in the Estates Medical Districts 66 hospitals and 116 dispensaries in charge of qualified medical officers and apothecaries. In addition there are 97 estate hospitals and 696 estate dispensaries which serve labourers employed on estates (including the 97 dispensaries attached to the estate hospitals).

Estate Hospitals.—During the year 93 estate hospitals were inspected for the purposes of granting rebate in respect of the year 1947. The hospitals were generally maintained in efficient condition and many of them did satisfactory work.

Estate Dispensaries.—696 estate dispensaries were functioning during the year as against 728 in 1947. Of these 146 were inspected during the year. These 696 estate dispensaries served 923 estates.

Medical Attendants.—Qualifications of officers in charge of estate hospitals and estate dispensaries are as follows:—

	1946	*1947*	*1948*
(*a*) Qualified Medical Officers	4	3	5
(*b*) Indian Qualified Medical Officers not registrable in Ceylon	6	4	4
(*c*) Qualified Apothecaries	1	1	1
(*d*) Approved Dispensers	710	685	683

Sanitary Inspection.—The total number of estates inspected and reported on during the year was 354 compared with 339 in 1947.

General Sanitary Condition :

	1946	*1947*	*1948*
Very good	20	16	25
Good	189	181	197
Fair	102	112	106
Poor	33	25	25
Bad	10	5	1

Of these estates inspected the number of estates having Sanitary dust-bins are—

	1946	*1947*	*1948*
Provided fully	44	42	63
Provided partially	116	106	101

Line Accommodation of those inspected..

	1946	*1947*	*1948*
(*i*) No. of estates having non-crowded lines	278	272	278
Slightly (10 per cent. or below) overcrowded	52	46	58
Overcrowded (over 10 per cent.) lines	24	21	18
(*ii*) No. of line rooms inspected	66,813	65,956	68,444
No. up to Government requirements	56,946	58,057	58,604
No. not up to Government requirements	9,867	7,899	9,840

Latrine Accommodation :			
(i) Of those inspected—			
No. of latrine compartments :			
Pit	13,038	10,978	11,368
Bucket	6,697	8,356	7,398
Water-borne	958	1,259	1,521
(ii) No. of latrine compartments further required	776	1,526	1,252
(iii) No. of estates having sufficient number of latrines	278	252	258
Insufficient No. of latrines	62	79	89
No latrines	14	8	7
(iv) No. of estates having sanitary conveniences for children (provided fully)	22	33	33
Provided partly	72	82	65
According to Type Plan :			
Provided fully	23	34	25
Provided partly	41	53	61

Water Supplies :	*1946*	*1947*	*1948*
(i) Of those inspected—			
No. of estates having entirely protected supplies	224	201	201
Partly protected supplies	99	105	114
Unprotected supplies	31	33	39
(ii) No. of estates having piped supplies—			
Wholly	193	181	109
Partly	49	63	49
Well supplies fully protected (covered well with pump)	58	26	37
Partly protected	57	55	61
Other sources of supply—			
Fully protected	10	4	8
Partly protected	17	21	22
Anky. Treatment :			
No. of estates treated	252	248	432
No. of persons treated	89,981	95,157	146,084
Maternity and Child Welfare Work :			
(a) Registered Estate Midwives—			
(i) In all estates	275	276	277
(ii) No. inspected (Midwives)	115	125	135
(iii) No. of estates served by them	462	441	435
(iv) No. of estates served by outside registered Midwives	148	197	203
(b) Unregistered Midwives—			
(i) No. in all estates	31	89	177
(ii) No. inspected	9	17	20
(iii) No. of estates served	38	335	180
(c) Births —			
(i) On estates visited	10,996	20,454	14,237*
(ii) On estates having registered midwives	7,103	7,033	7,125
(iii) Of (ii) attended by registered midwives	6,375	6,050	6,241

* = Births, 1948 : 14,237

In hospitals	3,954
In Maternity Wards	2,768
In Lines	7,515
Total	14,237

The percentage of cases attended to by the registered midwives on estates is 44 of the live births compared to a percentage of 34 in 1947.

	1946	*1947*	*1948*
(*d*) No of estates having creeches	687	690	673
(*e*) No. of estates supplying cooked meals to children of non-working age	385	357	391
(*f*) No. of estates with maternity wards.	227	230	224
(*g*) No. of estates with lying-in-rooms attached to lines	23	35	37
(*h*) No. of estates having clinics—			
(i) On estates	25	80	90
(ii) At hospitals	19	16	15
(*i*) No. of estates served by outs de Clinics	73	105	86
Vaccination against Small-pox :			
(*a*) No. of estates in which vaccination was carried out	1,052	1,138	1,293
(*b*) No. of persons vaccinated	28,572	24,851	31,947
(*c*) Vaccinations—Successful	23,792	21,092	28,343
Unsuccessful	774	1,063	636
Unknown	4,006	2,696	2,968
Anti-Typhoid Inoculations :—			
(*a*) No. of estates visited	45	44	69
(*b*) No. of persons inoculated—			
First dose	3,609	5,998	14,747
Second dose	1,432	2,112	8,279
Communicable Diseases :			
(*a*) No. of cases reported :—			
Chicken-pox	461	477	470
Cholera	—	—	—
Diphtheria	5	4	3
Dysentery	159	120	141
Measles	68	520	351
Mumps	95	186	31
Plague	—	—	—
Puerperal Pyrexia	—	1	—
Small-pox	22	1	3
Tuberculosis	30	25	42
Typhoid fever	174	188	158
Whooping cough.	15	51	43
(*b*) No. of visits in connection with communicable Diseases to estates by Inspecting Officer :—			
First visit	164	66	122
Subsequent	149	50	109
(*c*) No. of visits (Communicable Diseases) by Sanitary Inspectors :—			
First visit	558	1,021	955
Subsequent	1,130	1,424	1,463
Mandapam Camp :			
(1) No. of labourers passed			50,547
(2) No. of others passed			123,233
(3) No. of labourers rejected			44
(4) No. of others rejected			36
(5) No. of passengers subjected to surveillance			87,736
(6) No. of passengers completed surveillance			87,253
Thattaparai Camp :			
(1) Number of passengers who passed through Thattaparai Camp—			
Estate labourers			Nil
Others after full quarantine			6,045
No. rejected—			
Pyrexia			24
Leprosy			21
Recent attack of chicken-pox			2
Secondary Syphillis .			3
Physically unfit for travel			—
Non-production of valid anti-cholera inoculation certificates			133

(2) The following passengers were passed at Tuticorin without quarantine detention at Thattaparai Camp :—

Estate labourers	Nil
Others	14,119

(3) All passengers were subjected to surveillance in Ceylon and completed their period of surveillance here.

(iii) SANITARY ENGINEERING

Water Supplies

The outbreak of Typhoid Fever at Kataragama during the Festival in 1948 was responsible for the inauguration of the scheme of protected water supplies to proclaimed festivals. Supplies for the festivals at Mahiyangana and Kataragama were provided during the year.

Inspections, investigations and reports were made on water supplies to institutions and local bodies. Investigations were carried out in respect of the following:—

(1) Panadura Urban Council Water Supply.
(2) Matugama Water Supply.
(3) Investigation and design of chlorinating plant—Circuit Bungalow, Bopatalawa Farm.
(4) Estimation of repairs to the Filter Unit Hospital Water Supply, Uda Pussellawa.
(5) Installation of Chlorinating Plant—Well " D " Mandapam Camp.
(6) Investigation to Pipe Borne Water Supplies to late Royal Air Force Camp, Hingurakgoda.
(7) Investigation of Water Supply to Maharagama Training College.
(8) Investigation of Water Supply to Air Port, Ratmalana.
(9) Completion of designs and estimates to Sri Pada Water Supply.
(10) Investigation of Water Supply to the Training College of Youthful Offenders, Wathupitiwela.
(11) Investigation of Water Supply at the Giriulla Hospital.

Water Analysis

As usual comments and recommendations for treatment, &c., were made on a large number of routine water analysis reports of all pipe borne and other water supplies in all parts of the Island received during the year. Out of 262 samples analysed, 157 showed evidence of pollution.

Town Surface Draining Schemes

Investigations and designs in respect of the following 13 Town Drainage Schemes were completed by the Sanitary Engineer:—

Ambalangoda, Alutgama, Gampaha, Hambantota, Bogawantalawa, Chilaw, Badulla, Matara, Puttalam, Dehiwela-Mount Lavinia, Trincomalee, Moratuwa and Dambulla.

The construction will be undertaken by the Sanitary Engineer or by the Local Authority concerned under the supervision of the Sanitary Engineer.

Sewerage Schemes

Many schemes are in hand or awaiting surveys and investigations.

Construction of Rural Hospitals and Maternity Homes

The following Rural Hospitals were completed during the year:—

(1) Pallai.
(2) Puthukudiyiruppu.
(3) Wellawaya
(4) Welimada.

(5) Imaduwa.
(6) Imaduwa Apothecary's Quarters.
(7) Gokarella.
(8) Kuchchaveli.
(9) Godakawela.
(10) Galapatha.
(11) Minor Staff Quarters, Galapatha.
(12) Gonaduwa
(13) Minor Staff Quarters, Gonaduwa.
(14) Midigama.
(15) Minor Staff Quarters, Midigama.
(16) Minuwangoda
(17) Minor Staff Quarters, Minuwangoda.
(18) Pamunugama.
(19) Minor Staff Quarters, Pamunugama.
(20) Pesalai.
(21) Minor Staff Quarters, Pesalai.

The following Maternity Homes were completed during the year:—

(1) Galagedera.
(2) Errawela.
(3) Galpihilla.
(4) Hingurakgoda.
(5) Mahawela.
(6) Marassana.
(7) Owilakande.
(8) Palatuduwa.
(9) Ranwala.
(10) Kallanchiya.
(11) Manampitiya.
(12) Horawela.
(13) Dewilla.

The following works were also undertaken and completed during the year:—

(1) Pipe Borne Water Supply to the Rural Hospital and Maternity Home at Morawaka.
(2) Pipe Borne Water Supply to the Rural Hospital, Nalanda.
(3) Pipe Borne Water Supply to the Rural Hospital, Angunakolapelessa.
(4) Pipe Borne Water Supply to the Rural Hospital, Katuwana.
(5) Extensions to Nochchiyagama Maternity Home.

All works in respect of the items (2) and (3) have been completed except for piping and this is not possible due to an acute shortage of G. I. pipes in the Island.

Experiments and Research

Work on new types of Water Seal Syphons has been carried out and a new type plan issued. Further work is proceeding. Other work on soil pollution, experiments in filtration and chlorination have been planned and are about to be carried out.

Drawing Office

The following work was done in the Drawing Office during the year:—

Type Plans

Water seal twin latrines for housing schemes.
Water seal single latrine.
Type plan of Labourers' Quarters No. 88.
New Labourers' Quarters for Estates.

Site Plans

Site plans for 13 new institutions such as Hospitals and Maternity Homes and 8 site plans and key plans of Drainage Schemes for different towns were prepared.

Water Supplies, Drainage and Sewerage Schemes

Two water supplies and 23 Drainage and Sewerage schemes for towns and different institutions were prepared.

Town Survey Plans

A plan of town survey of Badulla was undertaken.

Hospital Equipments

Plans for different equipment for Hospitals such as Milk Sterilizing tables and Dispensary Cupboard were prepared.

Certificates and Charts

Printing names and dates on Medical College Council Certificates—

for Midwives	171
for Apothecaries	58
for Pharmacists	18
for Nurses	3
Total	250

Printing names on Red Cross Society Certificates	31
Charts for Malaria Epidemic Zones for 1948–49	2
Charts showing general death rates, Infant death rate, and Malaria Morbidity in Ceylon from 1931 to 1947 for Superintendent, Anti-Malaria Campaign, to be sent to the Rose Institute Exhibition	3

Miscellaneous Plans, Tracings, Specifications, Estimates and Reports of Recommendation

New design of Septic Tank and tracing for quarters for Hydro-Electric Scheme at Norton Bridge.

Tracing of Weir and Notch, Panadura Drainage Scheme.

Tracing of Water Softening arrangements.

Tracing of Chlorinator House and tank for Circuit Bungalow at Bopatalawa.

Plan of Mahawatte Incinerator.

Plan of Hunupitiya Industrial Wastes Plant.

Experimental Water seal latrine at Torrington Square.

Panadura Medical Officer of Health's Office and Child-Welfare Centre—Dust bin and type plan of well prepared for the Health Unit Guide.

Plan of Colonisation Scheme Hospital.

Colonisation scheme Hide Store Plan.

Detail plans Angoda Dairy Farm Buildings.

Plotting of Matale Outlet drains.

Preparation of estimate for Tataparrai Camp Drainage.

Preparation of quantities for the Town Planner for the towns of Nuwara Eliya, Hambantota, Moratuwa and Kotte.

Quantities for Karaiyoor Housing Scheme, Jaffna.

Quantities and specifications for Welisara Hospital Drainage.

Miscellaneous Works

(1) Dairy Farm Buildings, Angoda: All buildings have been completed except the Manager's Quarters and construction of surface drains and water supply.

(2) The Tender Board has decided to have the construction of water seal latrines carried out departmentally as the selected contractor did not carry out the work.

Lectures, &c.

Lectures on Sanitary Engineering and Malarial Engineering, &c., were delivered to Sanitary Inspectors and Sanitary Learners in training by the Sanitary Engineer and the Assistant Sanitary Engineers.

(B) EPIDEMIOLOGY

During the year under review no epidemic of major infectious diseases occurred. An outbreak of Poliomyelitis occurred in various part of the Island, the heaviest incidence being in the Central Province. As this was an unfamiliar disease in Ceylon a large amount of propaganda work regarding the nature of the disease and the measures that should be adopted to combat it was carried out. The incidence of the disease for the year rose to 301 and 37 of the cases proved fatal.

A special drive with regard to the control of Filariasis was inaugurated in the latter part of the year as a result of several surveys carried out along the south-west sea board. These surveys have revealed a high prevalence of the disease and a supplementary vote of Rs. 100,000 was obtained to intensify the campaign against the disease.

An important achievement during the year was the remarkable reduction in the incidence of Malaria. This year was very favourable for an outbreak of Malaria in an epidemic form as the drought that commenced in November, 1947, continued till October, 1948, but the residual spraying of D. D. T. which was carried out in a well organised manner was able not only to avert this epidemic, but also to cause an unprecedented reduction in the Malaria incidence. The Malaria morbidity rate came down to half of what it was in 1947, and almost one fourth of what it was in previous years.

The following table shows the number of cases and deaths from Communicable Diseases notified for the whole Island (inclusive of the Municipal Towns):—

Table XXV—Cases of Communicable Diseases notified to Medical Officer of Health

Diseases	*Cases*	*Deaths*
Chickenpox	4,508	—
Cholera	—	—
Diphtheria	181	25
Dysentery	1,061	116
Typhoid fever	1,838	198
Measles	2,461	3
Mumps	793	1
Pulmonary tuberculosis	2,316	528
Plague	—	—
Smallpox	8	2
Whooping cough	323	3
Poliomyelitis	301	37

Table XXVI—Distribution by Provinces of Notified Communicable Diseases

Province	*Population*	*Chickenpox*	*Cholera*	*Diphtheria*	*Dysentery*	*Typhoid Fever*	*Measles*	*Mumps*	*Pulmonary Tuberculosis*	*Plague*	*Smallpox*	*Whooping Cough*	*Poliomyelitis*
Western	2,001,000	1,759	—	140	274	422	711	249	1,316	—	2	149	45
Central	1,200,000	579	—	12	96	203	220	202	134	—	1	67	163
Southern	1,027,000	698	—	9	281	486	508	93	493	—	1	24	14
Eastern	292,000	85	—	—	33	61	88	12	24	—	—	—	3
Northern	510,000	196	—	5	130	186	273	86	104	—	—	48	15
North-Central	151,000	100	—	2	24	36	31	8	18	—	—	6	19
North-Western	711,000	395	—	10	77	138	279	81	111	—	3	7	20
Sabaragamuwa	798,000	574	—	2	99	194	297	57	103	—	—	10	7
Uva	396,000	122	—	1	47	112	54	5	13	—	1	12	15
Total	7,086,000	4,508	—	181	1,061	1,838	2,461	793	2,316	—	8	323	301

TABLE XXVII—Distribution by Months of Notified Communicable Diseases

Diseases	*January*	*February*	*March*	*April*	*May*	*June*	*July*	*August*	*September*	*October*	*November*	*December*	*Total*
Poliomyelitis—													
Cases	—	—	—	1	3	41	68	59	40	36	22	32	301
Deaths	—	—	—	—	1	6	5	7	7	7	2	2	37
Chickenpox—													
Cases	475	513	611	568	439	214	164	141	348	273	275	387	4,508
Deaths	—	—	—	—	—	—	—	—	—	—	—	—	—
Cholera—													
Cases	—	—	—	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—	—	—	—
Diphtheria—													
Cases	4	11	7	16	20	30	15	20	19	12	13	14	181
Deaths	—	—	3	3	2	5	3	3	3	1	2	—	25
Dysentery—													
Cases	129	106	80	57	97	72	60	100	106	90	79	85	1,061
Deaths	12	21	7	10	8	4	7	10	14	9	6	8	116
Typhoid Fever—													
Cases	105	129	86	114	115	108	115	189	387	207	171	112	1,838
Deaths	7	15	17	11	9	7	8	33	39	31	13	8	198
Measles—													
Cases	345	390	485	216	177	169	111	69	112	142	142	103	2,461
Deaths	—	—	2	1	—	—	—	—	—	—	—	—	3
Mumps—													
Cases	89	69	86	53	48	108	78	28	40	37	96	61	793
Deaths	—	—	1	—	—	—	—	—	—	—	—	—	1
Pulmonary Tuberculosis—													
Cases	75	196	200	139	239	219	195	209	202	196	267	179	2,316
Deaths	3	43	40	44	52	42	41	62	55	51	47	48	528
Plague—													
Cases	—	—	—	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—	—	—	—
Smallpox—													
Cases	—	—	7	—	1	—	—	—	—	—	—	—	8
Deaths	—	—	2	—	—	—	—	—	—	—	—	—	2
Whooping Cough—													
Cases	8	16	14	12	40	10	48	20	30	43	47	35	323
Deaths	—	—	1	1	—	—	—	—	—	1	—	—	3

Major Communicable Diseases

Plague.—There were no cases of Plague during the year. The last case of rat plague in the Island occurred on August 23, 1938, and the last case of human plague on May 29, 1938. Following is a statement of anti-plague work done in commercial premises:—

TABLE—Anti-plague Measures

Commercial premises inspected for rat holes	26,969
Rat holes found	61,347
Rat holes closed	49,375
Number of rats caught	27,226
Number of rats examined	227
Number found infective	—

Cholera.—There were no cases of Cholera in the Island during the year. The last case of Cholera in the Island occurred in December, 1946.

Smallpox.—There was no epidemic of smallpox during the year 1948, but altogether 8 cases of smallpox with two deaths occurred in the Island. The first six cases with one death occurred early in March. These occurred among a party of pilgrims who had returned from India by ' plane. This party of pilgrims had stayed in various places in India including the Maha Bodi Society Building within four miles of the Bombay Railway Station on February 22. They travelled to Madras on the 23rd and 24th and left on the 25th by an Air Ceylon 'plane to Kankesanturai. From Kankesanturai, one of the party, Punchi Rala, from Bandarawela went to Nainativu via Kayts and returned to Bandarawela on the February 28. From February 29 he started reporting at the Out-door Dispensary, Bandarawela. On March 5, 1948, he was unwell. On March 8, 1948, when he visited the Out-door Dispensary he was found to have developed a rash and the D. M. O. diagnosed it as smallpox and he was removed to the I. D. H., Bandarawela. On March 15, 1948, the patient died.

On receipt of information regarding this case on March 8, 1948, a list of the pilgrims who travelled by air from India was obtained and all Medical Officers of Health concerned were instructed to make investigations regarding the passengers and to keep them under observation since they were contacts. This resulted in the detection of five more cases among the pilgrims, one from Matara, one from Peradeniya, two from Narammala and one from Wariyapola. The source of infection of this outbreak was definitely established as India. The seventh case which was fatal occured during the latter part of March. This occurred in the Colombo District at Nugegoda. The source of infection of the case was not traced. The eighth case was also one imported from India. This was detected early in May within the Colombo Municipal limits in the person of a passenger who had come to Ceylon by the overland route from Hyderabad. There were over a hundred known contacts of this case but none of them developed the disease.

Vaccination against smallpox was carried out as usual by the vaccinators and the Sanitary Inspectors, who have received certificates of proficiency in vaccination. The following table gives the number of vaccinations performed according to provinces during the year 1948.

TABLE XXVIII

	Primary Vaccinations				*Revaccinations*			
Province	*Total*	*Successful*	*Unsuccessful*	*Unknown*	*Total*	*Successful*	*Unsuccessful*	*Unknown*
Western	39,781	31,045	3,489	5,247	17,282	4,061	2,150	11,071
Central	50,601	46,417	2,309	1,875	6,723	1,816	660	4,247
Eastern	8,925	8,008	174	743	727	293	110	324
Northern	13,580	10,788	1,582	1,210	8,242	1,129	420	6,693
North-Western	22,759	17,031	2,518	3,210	31,639	6,959	4,527	20,153
Southern	34,808	31,105	657	3,046	6,736	1,590	896	4,250
North-Central	6,145	5,222	295	628	8,564	4,075	1,409	3,080
Sabaragamuwa	27,046	24,351	520	2,175	4,953	2,565	234	2,154
Uva	13,372	11,362	1,025	985	9,716	3,796	4,550	1,370
Total	217,017*	185,329	12,569	19,119	94,582	26,284	14,956	53,342

* Represents approximately 75 per cent. of the births in 1948.

Minor Communicable Diseases

Poliomyelitis.—An unprecedented outbreak of Poliomyelitis was reported during the year. The first case occurred among Service personnel and later cases occurred in all parts of the Island. The heaviest incidence occurred in the Central Province with 163 cases and 18 deaths. The total number of cases for the Island was 301 with 37 deaths. The outbreak started towards the end of May, almost simultaneously in the Western, Central, Sabaragamuwa and North Central Provinces. The outbreak reached its peak during July/August after which it showed a progressive decline with a slight upward trend in December. It was lowest during the middle of July and again during the middle of November. The age groups mostly affected were those under five years; the incidence was lowest among those over thirty years. The death rate was also highest in those under five years. The disease was made notifiable in 1944. The incidence of the disease from 1944 as notified is as follows:—

Year	*Cases*	*Deaths*
1944	6	Nil
1945	4	1
1946	Nil	Nil
1947	Nil	Nil
1948	301	37

All Medical Officers as well as private practitioners in the Island were informed by a circular embodying information regarding the disease, and measures that should be adopted to combat it. The public was also informed through the Press which gave full asistance in the campaign.

Chickenpox.—4,508 cases were reported during the year with no deaths.

Diphtheria.—181 cases were reported with 25 deaths as against 140 cases with 31 deaths for 1947. The fatality rate was 13.81 as compared to 22.14 in 1947.

Measles.—The total number of measles cases reported was 2,461 with three deaths giving a fatality rate of .12 as against 3,896 cases with four deaths in 1947.

Mumps.—The fatality rate for Mumps was .13, the number of cases reported and deaths being 793 and one respectively.

Whooping Cough.—323 cases were reported with three deaths, the fatality rate being .93 as against 2.58 in 1947.

Typhoid.—1,838 cases have been reported with 198 deaths as against 2,096 cases with 273 deaths for 1947. The fatality rate was 10.77 as compared with 13.02 for the previous year. Few weeks after the Esala festival at Kataragama in Southern Province it was observed that Typhoid Fever had occurred among people who had visited Kataragama. Investigations were made and 154 cases of Typhoid were detected in various parts of the Island among people who attended Kataragama. To avoid a major outbreak, all Medical Officers of Health were instructed to carry out mass inoculations against Typhoid fever.

The following table shows the number of anti-typhoid inoculations given in the whole Island during 1948 as compared with 1947:

	1947	*1948*
First dose	86,521	160,237
Second dose	59,287	115,527

Dysentery.—1,061 cases of dysentery were reported with 116 deaths giving a fatality rate of 10.93 as against 1,246 cases with 124 deaths and a fatality rate of 9.95 for the previous year.

Malaria.—See separate Section on Malaria.

Filariasis.—See separate Section on Filariasis.

Parangi (*Yaws*).—There were altogether 3,269 known cases of Parangi out of which, 1,198 were infectious and the rest 2,071 non-infectious. The largest number of cases was from the Southern Province. Parangi treatment is done in hospitals, dispensaries and clinics where the disease is prevalent.

A number of new cases have been detected in Laggala Korale where a special survey was conducted during the year. Facilities are being provided for treatment of these cases at Pallegama Hospital.

The following table shows the work done in this connection during the year.

TABLE XXIX.—Parangi—Work done by Field Officers

	Cases			*Injections given*						*No. of Cases at end of Year*		
Province	*Total*	*Ineffective*	*Non-Ineffective*	*Number Treated*	*First*	*Second*	*Third*	*Fourth*	*Total*	*Total*	*Ineffective*	*Non-Ineffective*
Western	—	—	—	—	—	—	—	—	—	—	—	—
Central	315	81	234	123	117	66	33	34	250	315	70	245
Southern	2,085	977	1,108	640	640	210	199	158	1,207	1,895	720	1,175
Eastern	—	—	—	—	—	—	—	—	—	—	—	—
Northern	—	—	—	—	—	—	—	—	—	—	—	—
North-Western	393	9	384	49	46	28	13	7	94	393	6	387
North-Central	406	93	313	30	30	23	9	4	66	406	80	326
Sabaragamuwa	70	38	32	54	36	7	7	35	85	70	30	40
Uva	—	—	—	—	—	—	—	—	—	—	—	—
Total	3,269	1,198	2,071	896	869	334	261	238	1,702	3,079	906	2,173

Ankylostomiasis Campaign

Personnel.—The year under review commenced with twenty-one dispensers, the same number as for 1947, distributed as follows:—

Four Dispensers under Divisional Medical Superintendent of Health, Anuradhapura, for work in Northern, North-Central and Eastern Provinces.
Four Dispensers under Divisional Medical Superintendent of Health, Kurunegala, for work in the North-Western Province and Matale District.
Four Dispensers under Divisional Medical Superintendent of Health, Kandy, for work in Kandy District, Nuwara Eliya District and Province of Uva.
Four Dispensers under Divisional Medical Superintendent of Health, Colombo, for work in the Western Province and Kegalla District.
Three Dispensers under Divisional Medical Superintendent of Health, Matara, for work in the Southern Province and the Ratnapura District.
Two attached to the Head Office.

During the year 60 Sanitary Inspectors, a Public Health Nurse, and one Estate Dispenser were issued certificates of competency to assist at mass Hookworm treatment. The total number of Sanitary Inspectors qualified for assisting at mass Hookworm treatment up to the end of 1948 was 528 out of a total of 590 and these Sanitary Inspectors are gradually taking the places of the Anky Dispensers in the field.

The work done during the year is summarised in the following tables:—

TABLE XXX—Ankylostomiasis Treatments by all Agencies in 1948 and 1947

	1948			*1947*
	First	*Subsequent*	*Total*	*Total*
Government Institutions :				
(1) At institutions	831,706	49,049	880,755	925,606
(2) Outside institutions	70,246	—	70,246	58,459
Campaign Dispensers :				
(1) School children	310,488	—	310,488	251,502
(2) Villagers	98,637	—	98,637	94,263
(3) Estate labourers	393,867	—	393,867	333,796
Mandapam Camp	45,547	—	45,547	49,632
Estate Medical Staff	82,414	16,468	98,882	92,385
Total	1,832,905	65,517	1,898,422	1,805,643

There is an increase of 92,779 treatments in 1948 as compared with 1947.

TABLE XXXI—Treatments at Government Institutions

Ankylostomiasis Treatments at Government Hospitals and Dispensaries during the year 1948

Province	*Attendance (First Visits)*	*Treatments*			*Percentage of total treatments to first visits*
		First	*Subsequent*	*Total*	
Sabaragamuwa	1,110,037	85,314	3,788	89,102	8·0
Uva	382,215	36,846	1,626	38,472	10·0
Western	1,336,465	193,758	14,279	208,037	15·6
Eastern	342,988	31,008	2,164	33,172	9·7
Northern	411,626	54,707	2,407	57,114	13·9
Central	793,382	103,261	4,861	108,122	13·6
North-Western	994,444	138,959	6,876	145,835	14·7
North-Central	403,659	45,203	3,025	48,228	11·9
Southern	886,130	142,650	10,023	152,673	17·2
Total for 1948	6,660,946	831,706	49,049	880,755	13·2
Total for 1947	6,642,336	874,585	51,021	925,606	13·9

A decrease of 44,851 treatments is noted in 1948 when compared with 1947. The percentage of total treatments to first visits to medical institutions has remained practically the same as in 1947.

TABLE XXXII—Ankylostomiasis treatments given by the Medical Officers of the Department outside their institutions without the aid of the Campaign Dispensers during 1948

Province	*Schools*		*Estates*		*Villages*		*Total*	
	Number	*Number Treated*	*Number*	*Number Treated*	*Number*	*Number Treated*	*Number*	*Number Treated*
Central	17	4,448	12	3,468	8	2,408	37	10,324
North-Western	14	3,163	9	2,114	7	1,136	30	6,413
Western	12	2,318	11	2,799	9	2,203	32	7,320
Sabaragamuwa	8	1,930	8	1,479	8	1,216	24	4,625
Southern	14	2,789	8	2,134	9	967	31	5,890
Northern	8	1,743	—	—	11	5,068	19	6,811
Uva	15	5,214	13	3,692	8	2,276	36	11,182
North-Central	13	3,300	10	2,623	12	5,729	35	11,652
Eastern	12	1,970	—	—	10	4,059	22	6,029
Total for 1948	113	26,875	71	18,309	82	25,062	266	70,246
Total for 1947	123	18,511	112	21,906	125	18,042	360	58,459

Medical Officers of the Department have administered 70,246 treatments outside their institutions in schools, estates and villages. This is 11,787 over and above the 1947 figure of 58,459.

TABLE XXXIII—Ankylostomiasis Treatments at Mandapam Camp

Month 1948	*Number arrived*	*Number treated*	*Percentage treated*
January	1,764	1,583	89·7
February	3,341	2,998	89·7
March	3,936	3,556	90·3
April	5,031	4,485	89·1
May	4,670	4,213	90·2
June	7,125	6,368	89·4
July	6,115	5,515	90·2
August	4,250	3,876	91·2
September	4,700	4,257	90·5
October	3,444	3,146	91·3
November	3,053	2,741	89·7
December	3,101	2,809	90·6
Total for 1948	50,530	45,547	90·1
Total for 1947	54,579	49,631	90·9

The drop of 4,084 treatments when compared with the figures of last year was due to the fact that only 50,530 immigrant labourers came to Ceylon as against 54,579 in 1947. The percentage treated remains the same as in 1947.

TABLE XXXIV—Ankylostomiasis Treatments given by Campaign Dispensers in Schools, Estates and Villages

Month 1948	*No. of Units Dealt with*			*Treatments*			
	Schools	*Estates*	*Villages*	*School Children*	*Estate Labourers*	*Villagers*	*Total*
January	123	57	25	12,119	5,764	2,971	20,854
February	129	32	59	21,570	21,548	7,069	50,187
March	179	37	60	34,201	36,154	11,649	82,004
April	43	103	82	8,066	17,517	3,103	28,686
May	158	102	36	23,120	26,575	8,220	57,915
June	175	74	64	34,873	39,473	11,357	85,703
July	152	72	107	15,174	20,040	4,695	39,909
August	66	97	89	21,471	42,220	9,945	73,636
September	122	84	69	31,024	66,857	13,036	110,917
October	123	55	62	25,329	21,163	5,190	51,682
November	124	54	78	38,949	38,645	9,195	86,789
December	111	89	69	44,592	57,911	12.207	114,710
Total for 1948	1,505	856	800	310,488	393,867	98.637	802,992
Total for 1947	1,486	824	813	251,502	333,796	94,263	679,561

All 802,992 treatments were administered by the Campaign Dispensers in Schools, Estates and Villages during 1948 as compared with 679,561 in 1947.

TABLE XXXV—Ankylostomiasis Treatment Reported as given by Estate Medical Staff during 1948

Province	*Census of Estates Treated*	*Treatments*			*Percentage of total treatments to Census*
		First	*Subsequent*	*Total*	
Southern	14,284	2,497	1,099	3,596	25·2
Western	33,287	5,740	1,332	7,072	21·2
Central	355,416	50,219	9,678	59,897	16·9
Sabaragamuwa	110,147	14,273	2,688	16,961	15·4
Uva	80,902	9,405	1,591	10,996	13·5
North-Western	3,208	280	80	360	11·2
Total for 1948	597,244	82,414	16,468	98,882	16·5
Total for 1947	447,181	75,784	16,601	92,385	20·7

The number of treatments reported by the Superintendent of Estates who maintain hospitals and dispensaries in their estate is more by 6,497 as compared with 1947.

TABLE XXXVI

Number of days spent by Anky. Dispensers on Treatment and Educational Work and the Number of Talks given by them during 1948, as compared with 1947.

	1948	*1947*
Number of Dispensers (19 in the field and two at the Head Office)	21	21
Number of days spent on treatment	2,611	734
Number of days spent on Anky. education	3,105	1,091
Number of villages visited	3,454	960
Number of homes visited	78,733	26,818
Number of individual talks given in homes	65,544	24,462
Number of village group talks given	5,707	1,692
Number of school talks with charts given	2,718	480

A remarkable progress has been made on all the above items during 1948, although the number of dispensaries remained the same as last year.

TABLE XXXVII

Number of Schools, Estate and Villages treated by the Campaign Staff under the supervision of the various Officers of the Department during 1948

Supervising Officers	*Schools*	*Estates*	*Villages*
Medical Officers of Health	726	426	394
District Medical Officers and Assistants	230	332	261
School Medical Officers	213	—	19
Apothecaries in Charge of Dispensaries	336	98	126
Total for 1948	1,505	856	800
Total for 1947	1,486	824	813

This table shows a slight improvement on the work done during 1947. 28.78 per cent. of the schools and 3.91 per cent. of the villages have been treated. The number of estates treated was 37.07 per cent. of the total number of registered estates. There is room for improving this work and it is receiving the attention of the Department.

TABLE XXXVIII

Treatments given by the Campaign Staff on Estates during the year 1948.

Supervising Officer	*No. of Estates treated*	*Census*	*Number treated*	*Percentage treated to Census*
Medical Officer of Health	522	174,623	165,932	95·2
Apothecaries in Charge of Dispensaries	65	62,389	45,398	72·7
District Medical Officers and Assistants	269	231,458	182,537	78·8
Total for 1948	856	468,470	393,867	84·1
Total for 1947	824	347,519	274,538	78·9

This table too shows a slight improvement on the work done during 1947.

Proposals for the Future

(a) *Infectious Diseases.*—The provision of an improved ambulance service for the removal of cases of infectious diseases is being organized. It is also proposed to put up contact camps for the segregation of contacts of infectious diseases in all areas that are not served by Infectious Diseases Hospitals.

(b) *Malaria.*—In the past no one thought in terms of eradication of Malaria in any country. But after what has been achieved in countries like Brazil and Egypt where the Malaria carrying species of Anophelene mosquito was exterminated and in the gigantic experiment that was carried out in Cyprus and in Sardinia where a comprehensive scheme of eradication of all Anophelene mosquitoes has been in progress, the possibility of undertaking a Malaria eradication programme in Ceylon is being placed in the forefront of Pubilc Health activities. It is proposed to work out a method of eradication which is suitable for the conditions in Ceylon and to put it into operation in the near future.

(c) *Filariasis Control.*—While carrying out the present scheme of Filariasis control work in areas where the disease is prevalent it is proposed to open more clinics for the benefit of those who are already suffering from this disease. "Hetrazan" which is very effective as a public health drug in the treatment of early filariasis cases is used at some of the Filariasis Clinics. It will be used at all clinics as soon as stocks indented from the United States of America arrive.

(d) *Food and Drugs Act.*—There has been a long felt need for a Food and Drugs Act because public health work cannot be successfully developed when food and drink of low and injurious quality can be sold without fear of any legal consequences. A Bill has now been drafted and will be on the Statute Book shortly.

Summary of the Chapter.—The incidence of disease, both major and minor, has been comparatively satisfactory during the year under review. Poliomyelitis and Filariasis have caused some concern.

The introduction of the Food and Drug Act, the Malaria eradication programme, and the intensive control measures against Filariasis which is spreading rapidly, the facilities for the prompt removal of infectious diseases and the erection of contact camps for segregation of contacts of infectious diseases are some of the special items of work which have received the attention of the Department during the year, while other work in connection with epidemiology has been continued as usual. These measures will no doubt contribute to the progress of the Island's health.

C—MEDICAL ENTOMOLOGY

Following the retirement in June of Mr. H. F. Carter, who had been Medical Entomologist for 22 out of his total service of 27 years, Dr. S. H. Jayawickrema, Research Officer of this Division was appointed to act. The research section of this division along with Dr. Jayawickrema was transferred to the Medical Research Institute on November 24, and since then Dr. Bartholomeusz, Specialist Officer in Entomology has been in charge of the entomological work of the Department.

The Medical Assistant in Entomology, Kurunegala, Dr. D. S. R. Gunewardena, was appointed to act as Medical Officer of Health, Galgamuwa, from December 10, for a period of six weeks, Dr. P. L. F. de Livera, Medical Officer of Health, Kurunegala, taking over his duties.

Teaching.—Lectures and demonstration classes in Medical Entomology, with particular reference to Malaria Entomology were given during the year to Sanitary Inspectors, Sanitary Learners and Laboratory Assistants in training. Seventy-five students in all, received training. Laboratory Assistants were given a month's training and such classes were held throughout the year. Sanitary Learners, of whom there were 36, were given a course of eight lectures and four demonstrations. In the absence of the Medical Officer of Health, Kurunegala on leave, lectures and demonstrations in Malaria Entomology were given to a class of Sanitary Inspectors at the Malaria Field Training Centre, Kurunegala, by Dr. G. F. Bartholomeusz, Research Officer in Entomology.

Investigation Work: (a) Laboratory and Field Work.—The field work during the year consisted of special investigations as at Anuradhapura and Polgahawela into the efficiency of D. D. T. spraying and routine observation work at 54 Malaria Observation Stations and 328 Subsidiary Observation Sites, situated mainly in the Wet and Intermediate Zones. The observations made at these stations were of great assistance in the past in detecting the prevalence of larvae and adults of Anopheles Culicifacies, so that river oiling which was the most important malaria control measure in use could be put into operation with the least possible delay. Since 1946, however, river oiling has been gradually superseded by the residual spraying of D.D.T. in houses, so that in 1948, this was the only control measure that was being applied. The work at the Malaria Observation Stations and Subsidiary Observation Sites was still carried on and the results of these examinations have proved useful in assessing the value of the D.D.T. spraying.

The year under review was characterized by a drought which seemed even more severe than that in 1934. It was brought about by the failure of the North-East monsoon of 1947-48 and the partial failure of the South-West monsoon of 1948. Until December, 1948, the rainfall had been well below average over the greater part of the Island. These conditions of drought were not alleviated to any great extent owing to the late arrival of the North-East monsoon, which in one record-breaking spell in December, filled to over-flowing the tanks of the Dry Zone which had only been partially filled by the intermittent rains of the previous weeks.

The entomological findings which are summarized in the following tables are therefore interesting as from previous experience this year should have seen a widespread epidemic of malaria. In 1934, the system of observation work now done was not in existence but a comparison is possible with the entomological findings for 1945, another year of severe drought, in which an epidemic of malaria, particularly in the basin of the lower and middle reaches of the Maha-oya, took place. In 1948, of 41,376 mosquitos collected from Malaria Observation Stations situated in all parts of the Island, except the Northern Dry Zone, only 34 adults of Anopheles Culicifacies were found, i.e., 0.08 per cent. of the total catch as against 0.03 per cent. in 1947. But in 1945 of 50,494 Anopheline mosquitos collected, 2,590 were Anopheles Culicifacies, (5 per cent.), with an infection rate of 1.5 per cent. Thus in 1948, a comparable year of severe drought, when conditions for Anopheline breeding were most favourable only 34 Anopheles Culicifacies were found although 43,603 houses were searched for adult mosquitos.

There was an increase in the number of Anopheles Culicifacies larvae collected in 1948. In 1947, 568 larvae were collected, almost entirely from the Northern section of the Intermediate Zone. In 1948, 2,065 Anopheles Culicifacies larvae were found, but while 1,280 larvae were found in the Northern section of the Intermediate Zone. 679 larvae were found in the Wet Zone. Such figures, particularly in the Wet Zone, are typical of a year of drought, when the pooling of rivers and streams offer ideal breeding places for larvae. In 1945, for instance, which as mentioned earlier was also a rainless year, no fewer than 6,662 Anopheles Culicifacies larvae were found and were well distributed in all zones, except the Southern section of the Intermediate Zone.

The larval and adult figures for Anopheles Culicifacies indicate that in a year of drought comparable with that of 1934 or 1945, the Islandwide D.D.T. spraying had kept the density of the vector to well below the threshold at which transmission could take place, for no epidemic of malaria occurred anywhere.

(b) *Observations on the effect of routine spraying with D.D.T. Emulsion at Anuradhapura.*—Since November, 1945, houses in the town of Anuradhapura have been sprayed every six weeks either with a five per cent. solution of D.D.T. in kerosene or as from January, 1946, with a D.D.T. emulsion of similar strength. This residual spraying of houses has been the only form of malaria control adopted and superseded the anti-larval measures which were adopted prior to November, 1945.

As in the previous year entomological observations were carried out in four selected areas in the town, viz., Elakattuwa Road, Jaffna Junction, Kurunegala Road and Malwatu-oya Lane; at Ratmale and Mankadawala, two neighbouring villages also under treatment, observations were also carried out and in the village of Ponnarankulama, where the houses were untreated and which therefore acted as a control. In addition to routine morning examinations of houses for adult mosquitoes, evening examinations once a week were carried out at Jaffna Jucntion, Mankadawala and Ponnarankulama commencing in July.

It is noteworthy that in 1948, not a single adult Anopheles Culicifacies was found during the day or night examinations in the treated areas, either in the town or in the neighbouring villages. At the untreated control, however, at Ponnarankulama they were found in large numbers, particularly from July to December.

In 1947, 4,339 houses were examined yielding 449 mosquitoes, 78 per cent. of which were *A. subpictus* and *A. Vagus*. Only 4 *A. Culicifacies* were recorded. At Ratmale and Mankadawala, two neighbouring villages, 1,072 house examinations yielded 63 mosquitoes of which only 2 were *A. Culicifacies*. At Ponnarankulami, the control, 661 house examinations yielded 108 mosquitoes, of which 12 were *A. Culicifacies*. In 1948 in the town only 17 mosquitoes were found in 3,618 house examinations during the day, and only 5 mosquitoes in 391 house examinations at night. Similarly, at Ratmale and Mankadawala the catches were very low; 6 mosquitoes in 1,030 house examinations during the day and 3 mosquitoes in 262 house examinations at Mankadawala at night being recorded. In comparison the catches at Ponnarankulama were very high. Day time catches yielded 1,131 mosquitoes in 526 house examinations. Of these 868 or 77 per cent. were *A. Culicifacies*. At night 251 house examinations yielded 989 mosquitoes of which 937 (95 per cent.) were *A. Culicifacies*.

While the results are striking and may be taken as indicative of the efficiency of D.D.T. spraying, the severe drought that was experienced until October must also be taken into account in assessing the data. The very high catches at Ponnarankulama were due to the pooling of the Malwatu-oya, which ceased to flow sometime in July. Consequently, the river formed an ideal breeding place for mosquito larvae. These catches at Ponnarankulama are significant as the Malwatu-oya passes through the town and either it or an ela which joins it are within easy reach of two of the catching stations, at Malwatu-oya Lane and Jaffna Junction. As even evening catches at the latter station proved negative to *A. Culicifacies*, it is justifiable to conclude that the residual spraying was highly effective as no abnormal increase in the anopheline population took place with the onset of the rains. It is quite apparent that the density of *A. Culicifacies* in this town has been brought down to a very insignificant level as a result of regular spraying with D.D.T. in the past three years.

(c) *Observations on the effect of routine spraying of D.D.T.—Polgahawela and Alawwa areas.*—These observations which were begun in 1947 were carried out on similar lines to those in Anuradhapura. In addition to day and night time catches in houses, adults were also collected by spraying houses with pyrethrum. These observations were carried out in the area of the Medical Officer of Health, Polgahawela. Five untreated villages which served as controls were also kept under observation. Of these three were in the area of the Medical

Officer of Health, Narammala and one each in the areas of the Medical Officer of Health, Warakapola, and Medical Officer of Health, Kegalla, respectively. As in 1947 the number of anopheline mosquitoes found (there were no *A. Culicifacies*) was negligible. In all 10,673 house examinations by day and at night and by spray-catching yielded only 81 mosquitoes, while 4,269 house examinations in the control villages yielded 62 mosquitoes. For an area which should have seen prolific breeding of mosquitoes in a year of severe drought these figures are remarkable and probably testify to the effectiveness of the D.D.T. spraying in this Intermediate Zone area. The catches in the untreated area although five times higher than in the treated area are, however, lower than what one would expect. These low catches are probably partly due to the effect of widespread spraying of D.D.T. in areas surrounding the control villages. It is significant that the mean catching rate at night time was only 0.01 higher than during the day. If the absence of mosquitoes during the day could be attributed to repellency of D.D.T. then one would have expected mosquitoes, particularly *A. Culicifacies*, to be found shortly after dusk when the night-time catches were carried out. These night-time catches were instituted from July onwards to test this very point and the comparative absence of mosquitoes at night may be taken as indicative of the almost entire absence of anopheline mosquitoes in the treated area.

(*d*) *Eye Flies and Conjunctivitis at Batticaloa.*—During certain months of the year, notably July, August and September, eye flies are a great nuisance in Batticaloa and are probably responsible for the widespread conjunctivitis that effects people of all ages in September, October and November. At the time that eye flies are most numerous, the Palmyrah fruit ripens and falls and the object of this research was to ascertain the correlation, if any, between the prevalence of eye flies (*Siphunculina funnicola*) and the ripening of the Palmyrah fruit.

After preliminary laboratory work which was carried out in Colombo to rear the eye fly through the life cycle, so that all stages could be readily recognized, field investigations were carried out at Batticaloa, during two visits from August 12 to September 11 and from October 5 to 28.

Analysis of the hospital records for Batticaloa town showed definitely that there was a very large increase of cases of conjunctivitis in September, October and November (664 in September, 1947; 1,082 in October and 831 in November, as against, for example, only 90 cases in January, 1948.)

The eye fly has been found to breed in decaying organic matter particularly of animal origin, but its breeding places have more often eluded identification. On both visits a wide and varied number of breeding places was examined. On the first visit when Palmyrah fruits were rotting on the ground in very large numbers 368 were examined and on the second 41. But at the time of the second visit the pericarp of the fruits had almost rotted away. While house fly larvae were breeding in very large numbers on Palmyrah fruits on the first visit, only a single larva of *Siphunculina funicola* could be found, while none were found on the second visit. Breeding places which proved positive to eye fly larvae were cattle dung (1), human excrement (3), trenching grounds (6), fish " dressing " place (3), pumpkin plant bed (1) and soil saturated with latrine washings (1). The fish " dressing " place is peculiar to Batticaloa. Almost every compound contains a large knife about 18″ in length mounted vertically on a board. Fish, which forms a staple part of the diet of the people is prepared for cooking on this contraption which is known locally as an " arival ". The soil around the " arival " becomes saturated with decaying pieces of fish and even in the driest weather the soil is always damp. It is likely that breeding takes place heavily around " arivals " in Batticaloa at the appropriate season.

At the time of the first visit eye flies were abundant in Batticaloa. But as only 16 out of 814 breeding places (as against two out of 591 on the second visit) were positive for larvae of *Siphunculina* it was evident that the peak of the breeding season had already passed. The breeding season probably commences about the middle of June and reaches its peak sometime in July. However, as the Palmyrah fruit ripens and falls in August it is evident that it can scarcely be utilized as a breeding medium on a scale as the rotting of the furit and the peak of the breeding season do not appear to coincide. On the second visit in October the nuisance was almost over and eye flies were relatively scarce. No breeding was found to occur in cadjan and straw thatch unlike in Assam where thatch grass was found to be the only breeding medium.

Control of the eye fly could probably be best effected by pyrethrum spraying of the hangings on which they congregate before 10 a.m. and after 5 p.m. In between these hours eye flies are very active. D.D.T. spraying was found to be quite ineffective as it is not directed, in the normal course of spraying against mosquitos, on the hangings where eye flies are found. At the time of the first visit D.D.T. spraying of the houses was being carried out quite efficiently without any apparent reduction in the density of eye flies.

(e) *Filariasis Control in Dehiwala-Mt. Lavinia.*—The control of Filariasis in the area of the Dehiwala-Mt. Lavinia Urban Council was taken over by the Department and the work of organizing the control was commenced by the Superintendent, Anti-Malaria Campaigns on November 20. The checking up of the efficiency of the control was undertaken by this Division and arrangements were made to place a whole-time officer in charge as from January 1, 1949. Few preliminary examinations were made in December before the control organization was properly under way. These examinations revealed infected *Culex fatigans*, the vector of *Wuchereria bancrofti*, in almost every series of houses examined.

(f) *Fly Surveys.*—During the year two fly surveys were undertaken at the De Soysa Lying-in-Home and at the Victoria Memorial Eye Hospital. At the former institution an epidemic of infantile diarrhoea was in progress and it was found necessary to be certain that this was not due to any foci of fly breeding in the hospital premises. A survey revealed that the hospital, apart from four potential breeding places, was free of any foci of fly breeding and that the presence of flies, particularly in the kitchens, could be attributed to breeding places outside the hospital, in an area whose sanitation is under the control of the Municipal authorities.

At the Victoria Eye Hospital the ward that was affected was close to the incinerator and the fly nuisance was due to garbage bins being stored here awaiting disposal. No foci of fly breeding were found in the hospital premises.

Research—A part from the field investigations on the residual effect of insecticides and the laboratory and field investigations into the eye fly nuisance at Batticaloa, no special laboratory investigations were undertaken. During the course of the year the research on Scrub Typhus was brought temporarily to a close. This problem was first started during the war and has yielded useful results, notably in first demonstrating a method of feeding the nymphal and adult stages and later in evolving a method of rearing the mite through all its stages, through several generations in the laboratory. By the method which has already been reported elsewhere, *Trombicula acuscutellaris* (now known as *Trahgardhula acuscutellaris*) and *Trombicula deliensis*, a proved vector of Scrub Typhus, have been successfully reared. Much data on the bionomics of these two species has been collected and will be written up in due course.

Publications:

(1) H. F. Carter and D. P. Wijesundera—Notes on some Ceylon Culicine Mosquitoes', Ceylon Journal of Science, Section B, Volume 23, pages 135-151, 1948.

(2) H. F. Carter—The Genus Taeniorhyncus Lynch Arribalzaya (Diptera, Culicidae) with special reference to the Bionomics and Relation to Disease of the Species occuring in Ceylon.

(3) H. F. Carter and P. Antonipulle—Observations on Sand Flies (Phlebotomus) in Delft Island, North Ceylon. (Accepted for publication, Annals of Tropical Medicine and Parasitology).

(4) S. H. Jayawickrema—The Control of Anopheles Culicifacies in Anuradhapura. The results of three years residual spraying of houses with D.D.T. (In preparation).

TABLE XXXIX

MALARIA OBSERVATIONS STATIONS—SOUTH WEST AND CENTRAL CEYLON

Summary of work during the year 1948

		Adult Mosquitoes					*Larvae*			
Locality	*No. of Stations*	*Houses examined*	*Night Trapping (hours)*	*Mosquitoes examined*		*Anophelines dissected*	*Breeding places examined*	*Anopheline larvae examined*	*No. of A. Cul. larvae*	
				Anophelines	*Culicines*				*Rivers and streams*	*Village breeding places*
Dry Zone										
Hill Country (over 1,000 ft.) ..	4 ..	2,620 ..	280 ..	13,947 ..	3,021 ..	501 ..	2,158 ..	16,578 ..	9 ..	17
Intermediate Zone										
(*a*) Northern Section ..	30 ..	27,029 ..	1,480 ..	13,430 ..	15,779 ..	191 ..	18,828 ..	93,268 ..	1,010 ..	270
(*b*) Southern Section ..	5 ..	4,427 ..	302 ..	4,325 ..	7,247 ..	120 ..	2,909 ..	14,004 ..	0 ..	64
Wet Zone ..	15 ..	9,527 ..	847 ..	9,674 ..	7,626 ..	794 ..	5,112 ..	32,503 ..	679 ..	16
Total ..	54 ..	43,603	2,909	41,376	33,673	1,606	29,007	156,353	1,698	367

TABLE XL

MALARIA OBSERVATION STATIONS

Comparative findings for A. Culicifacies, Adult catches 1939 to 1948, inclusive

Year	*A. Culicifacies (adults)*	*A. Culicifacies dissected*	*Per cent. of stations recording A. Culicifacies according to the number of examinations*	*A. Culicifacies as a per cent. of the total Anopheline catch*	*Infections with Malaria*	*Infection Rate*	*Remarks*
1939	14,057	9,727	52.0	8·2	155	1.59	Severe and widespread malarial epidemic—chiefly April to July
1940	4,040	3,244	35·6	4.3	39	1·20	—
1941	1,360	1,070	17·1	1.6	13	1·20	—
1942	699	6	11·7	1.1	3	0·57	—
1943	1,461	970	12·3	3.2	8	0·82	Increased prevalence of Malaria in restricted areas
1944	1,088	718	9·3	2·6	3	0·42	—
1945	2,590	1,662	27·9	5·2	26	1·56	Epidemic in northern part of epidemic zone in latter part of year
1946	1,553	689	14·1	4·0	1	0·14	—
1947	15*	Nil	1·5	0·03	Nil	Nil	* M. O. S., Chilaw figures are up to the end of April 1947, after which date this station was taken up for special work † Adults were found dead soon after capture, due probably to the effect of D.D.T.
1948	34	7	1·5	0·08			—

TABLE XLI

Anopheline Prevalence in Houses, Anuradhapura and Vicinity, 1940 to 1948

(Mean catching rates per hour—daytime catches)

Month	*1940-45*		*1946*		*1947*			*1948*		
	**Town (Unsprayed)*	*Villages (Unsprayed)*	*Town (Sprayed)*	*Villages (Unsprayed control)*	*Town (Sprayed)*	*Villages (Sprayed)*	*Villages (Unsprayed control)*	*Town (Sprayed)*	*Villages (Sprayed)*	*Villages (Unsprayed control)*
January	3·6	12·0	0·01	2·0	0·2	—	0	0·05	0	3·7
February—April	0·2	7·3	0·003	0·06	0·3	0·06	0·1	0·06	0·05	1·0
May—June	7·4	0·7	0·005	0	3·1	0·6	0·8	0·03	0·01	14·4
July—October	0·8	0·2	0	0	0·02	0·2	0·2	0	1·9	23·5
November—December	21·0	23·8	0·06	1·3	0·1	0·1	12·9	0·01	5·3	19·7

* only anti-larval measures adopted in these years.

TABLE XLII

Anopheline Prevalence in Houses—Anuradhapura and Vicinity, 1948

(Mean catching rates per hour—night time catches)

Month	*Jaffna Junction (Town) sprayed*	*Mankadawala (Village) Sprayed*	*Ponnarankulama (Village) Unsprayed*
July	0·4	0	34·5
August	0	0	23·4
September	0	0	36·0
October	0	0	14·1
November	0	0·4	15·0
December	0	0	7·0

TABLE XLIII

Adult Anopheline Prevalence as shown by Day and Night Catches—Polgahawela and Alawwa

Type of Observation		*Area treated with D. D. T.*	*Untreated Area control*
Day time hand catching	Houses examined	7,765	3,031
	Catching hours	1,011½	440½
	Anophelines caught	22	40
	Mean catching rate	0·02	0·09
Day time spray catching	Houses examined	2,385	1,238
	Catching hours	675½	390½
	Anophelines caught	53	22
	Mean catching rate	0·08	0·05
Night time hand catching	Houses examined	523	—
	Catching hours	174	—
	Anophelines caught	6	—
	Mean catching rate	0·03	—

(D) SPECIAL DISEASES

(1) MALARIA

Malaria had been for centuries the major problem disease of the Island. There are many who consider that Malaria was one of the chief contributary factors for the downfall of our civilization. Apart from the large toll of deaths that this disease had claimed from year to year it had sapped the vitality of the people and had rendered them incapable of active work either in agriculture or in industry.

Many of our major undertakings in the past particularly in the field of agriculture and colonization had been foiled by the incidence of Malaria.

The chief malarial season in the large dry zone area coincides with the period of greatest agricultural activity and therefore created a problem of the greatest importance in regard to the cultivation of rice, the staple diet of the people.

In addition to endemic malaria which prevailed in nearly 2/3 of the land periodic cycles of epidemic malaria occurred regularly claiming a heavy toll of life and leaving behind a high degree of morbidity.

The greatest of these epidemics in 1934/35 shook the legislature and the public in an unprecedented manner and mainly as a result of this epidemic the Malaria Control Scheme was inaugurated.

Although so called, the Scheme was really one to implement the Health Unit method of Public Health work with a special bias for Malaria. By this method of approach it has been possible to integrate Malaria with all the other public health activities such as Sanitation, Maternity & Child Welfare, School Health Work, &c.

The results have been more gratifying than could have been anticipated. With the control of malaria during the last two years the organization developed as a result of the great epidemic is now available to tackle many other public health problems which are inherent in a tropical country like ours.

Malaria Control.—During the year under review the scheme of work carried out on an Islandwide scale was as in the previous year, residual spraying of D.D.T. in all areas where malaria was endemic. The results so far achieved have been very gratifying as can be seen from the tables given below. The lowest spleen rate, morbidity rate and mortality rate have been recorded in various endemic and hyper-endemic areas during 1948.

Endemic Malaria.—There were 30 truck units, 6 jeep units and 20 walking units operating till September, 1948. Thereafter 5 more jeep units and 2 walking units were added. These units sprayed the water emulsion of D.D.T. at an interval of six weeks, except in the Polgahawela and Galigamuwa Health areas where the spraying was done once in eight weeks. Only the low roof, eaves, front walls and the inside rooms were sprayed, an average dosage of about 100 mgms. of D.D.T. per square foot being used on a total of 583,188 houses. The total number of applications was 3,359,457 as compared with 1,761,293 in 1947. The cost per application in 1947 was Re. 1.21 and in 1948 it worked out to Re. 1.14.

Malaria Morbidity.—The incidence of malaria over the whole Island was studied with the help of weekly returns from dispensaries and hospitals. In each of the preceding 15 years, except in the years 1944, 1947 and 1948, there have been more than 2½ million cases of malaria treated at dispensaries. The year 1944 appears to have been a healthy year as judged by malaria morbidity figures. But this is not correlated with a corresponding lowering of general death rates or infant mortality rates. Nor can these low figures be considered as a beginning of a natural decline in the incidence of malaria because in the years 1945 and 1946 there has been an increase. The decline in 1947 and in 1948 is definite and is correlated with a similar decline in general death rates, infant mortality rates and spleen rates. There were 212 cases of malaria per 1,000 of population in 1947 as compared with 415 in 1946, almost a 50 per cent. reduction. For the first time for several years, the total incidence in 1948 has left the seven figure mark. The morbidity rate per 1,000 is 109 which is about half of what it was in 1947 and almost a fourth of what it used to be in previous years.

The morbidity figures are based on clinical diagnosis and not on parasitological findings. It must be said that there is a greater tendency on the part of officers in charge of out-door dispensaries, particularly those situated in endemic areas to diagnose every case of fever as one of malaria. Further, every case to which Quinine is prescribed is labelled as a malaria case, even though the Quinine was used more as an anti-pyretic than as a specific against malaria. Under these circumstances, one is inclined to say that the total genuine malaria cases will be less than what is given in the tables.

Spleen Rate.—The spleen rate of any place is the best evidence of endemic malaria. Spleen surveys of school children were carried out all over the Island from 1938 to 1941, when on account of the war, this activity was stopped and re-started in September, 1946. Since then, it is carried on biannually. The March survey is carried out at the end of the transmission season and one should expect the findings at this survey to be higher than in September preceding which, malaria transmission has been at a minimum for nearly six months.

The Island rates which used to be between 18 per cent. and 20 per cent. or more till 1941 started declining in September, 1946. In September, 1948, it is at the unprecedentedly low level of 3.5 per cent. The decline has been steadly and is correlated with the lowering of the death rates, &c.

Parasite Rates.—Islandwide parasite surveys have been carried out along with spleen surveys. Unfortunately some of the older records of health areas are not available. But, the rates by provinces are available and are tabulated. These rates show a general reduction in 1947 and 1946. The survey in March, 1948, was carried out just at the close of the usual transmission season and it is gratifying to note that except in the case of the Eastern Province, there is a reduction, thus showing that active transmission was effectively stopped. In the Eastern Province, the slightly higher rate is due to the fact that certain portions of the Province could not be brought under D.D.T. spraying owing to inaccessibility.

Vital Statistics.—The Island death rate and infant mortality rate have shown a very welcome decline during the years 1947 and 1948. This is an achievement to which the work of this division has contributed very materially.

Malaria Mortality.—It must be pointed out that this is the most inaccurate part of the vital statistics because the registration, except in the proclaimed towns, is done by lay registrars whose diagnosis of the causes of deaths cannot be relied on. Still the trend of the decline in malaria mortality in 1947 and 1948 as compared with previous years in the same health area stands out prominently.

Epidemic Malaria.—The drought that commenced in November, 1947, continued up to about the end of October, 1948. The rainfall for the period October, 1947-September, 1948, reached a total of 63.7 inches in the Maha-oya and Deduru-oya catchments as compared to 88.9 inches which is the standard annual average rainfall for the same catchments. In spite of this pronounced drought there was no epidemic in these catchments or in any other catchments affected by similar droughts. In previous years as in 1939 and in 1943 when the drought was less marked, epidemics occurred. These gratifying results in 1948 were obtained as a result of the new method adopted this year for preventing epidemics. During previous droughts it used to be the practice to undertake river oiling on an extensive scale. In spite of a very heavy expenditure on this scheme of river oiling no appreciable results were obtained. This year, all that was done was to transfer some of mobile units from the endemic zone into the epidemic zone in order to carry out residual spraying of D.D.T. in the houses situated within half a mile of all rivers and streams, usually affected by drought conditions. Two rounds of residual spraying of D.D.T. were completed rapidly within a period of three months beginning from February, 1948. During the previous drought periods it was observed that the incidence of malaria assumed epidemic proportions about six months after the commencement of the drought. As this year's drought commenced in November, 1947, the epidemic rise should ordinarily have commenced by about April, 1948. It is in order to prevent this rise that the spraying was undertaken in February, 1948. In all 125,771 houses were sprayed.

Special Studies: (a) Epidemiology.—In view of the prevailing drought it became necessary to study in very close detail all the factors related to epidemic malaria. Rainfall figures, morbidity figures and parasite prevalence had to be constantly studied and a watch was kept on the malaria situation of the Island. Personal visits had to be made by the Superintendent, Anti-Malaria Campaigns, and the two medical officers to areas which are usually subject to epidemic malaria with a view to studying conditions at the spot.

(*b*) *Spleen and Parasite Surveys.*—Spleen and parasite surveys were carried out in March and September, 1948. Reports have been submitted on the two spleen surveys and on the March parasite survey. Owing to a shortage of laboratory staff it was not possible to complete the examination of blood films of the parasite survey. It is hoped to complete this before the end of February.

(*c*) *Experiments.*—The experiments which were started in 1947 at Chilaw and Maho with a view to testing out certain proprietary insecticides were continued this year. These experiments are being conducted in collaboration with the Medical Entomologist.

(*d*) *Paludrine.*—A report was submitted on the value of Paludrine in the suppressive treatment of malaria in the Kekirawa area.

Laboratory Work:

Examination of Blood Films:—

(*a*) *Miscellaneous—*

Number examined	4,680
Number positive	252
Parasite rate	5·4 per cent.

Percentage prevalence of species:

Benign tertian	39·7 per cent.
Malignant tertian	32·5 per cent.
Quartan	28·2 per cent.

(*b*) *Parasite Survey, September, 1947:—*

(Examination of Blood Films completed in 1948)

Number examined	6,467
Number positive	30
Parasite rate	0·5 per cent.

Percentage prevalence of species:

Benign tertian	50·0 per cent.
Malignant tertian	26·7 per cent.
Quartan	23·3 per cent.

(*c*) *Parasite Survey, March, 1948—*

Number examined	20,057
Number positive	122
Parasite rate	0·6 per cent.

Percentage prevalence of species:

Benign tertian	35·0 per cent.
Malignant tertian	38·2 per cent.
Quartan	26·8 per cent.

(*d*) *Parasite Survey, September, 1948:—*

(Examination not complete)

Summary of results obtained so far is given below:

Number examined	13,907
Number positive	91
Parasite rate	0·7 per cent.

Percentage prevalence of species:

Benign tertian	22·0 per cent.
Malignant tertian	23·0 per cent.
Quartan	55·0 per cent.

Transport.—There are in all 33 trucks and 13 jeeps belonging to the anti-malaria ivision. During the previous year it was the practice to get all the necessary epairs effected in recognised garages or motor repair shops in Colombo or in outtations. The expenditure incurred in 1947 was Rs. 27,052 when the total numer of vehicles was 37. In 1948 this division employed the full time services of otor mechanics and helpers and started an itinerating repair service. The total ost of the workshop and repair service amounted to Rs. 14,882.92 which is ractically half of what was spent in the previous year. This was possible because f the efficient attention paid by the Transport Foreman.

Health Exhibition.—This division was responsible for organising the malaria ection of the Central Health Exhibition held in August, 1948. This section as bracketted with the Maternity and Child Welfare Section for the second place the Challenge Cup Competition for the best organised section in the exhibition.

International Conference.—For the second year in succession the Superintenent, Anti-Malaria Campaigns, was invited to attend and to take part in the delierations of the Malaria Conference called by the Indian Research Fund Associaon. This year the Conference was held in Madras on October 31, and ovember 1, 1948.

TABLE XLIV

Malaria Morbidity for the Island

Year	*Estimated Population*	*No. Malaria Cases*	*Mobidity Rate per 1,000*
1936	5,631,000	2,947,555	523
1937	5,712,000	2,308,976	404
1938	5,810,000	2,053,079	353
1939	5,897,000	3,210,795	544
1940	5,951,000	3,413,618	574
1941	6,020,000	3,220,360	535
1942	6,021,000	3,225,477	536
1943	6,134,000	2,141,329	349
1944	6,276,000	1,672,478	266
1945	6,496,000	2,539,949	391
1946	6,695,000	2,768,385	413
1947	6,879,000	1,350,521	196
1948	7,100,000	775,276	109

TABLE XLV

(*a*) Spleen rates for the Island

March 1936	*March 1937*	*March 1938*	*March 1939*	*March 1940*	*March 1941*	*Sept. 1946*	*March 1947*	*Sept. 1947*	*March 1948*	*Sept. 1948*
30·6	28·4	21·2	18·2	17·9	18·4	11·8	10·3	7·6	5·18	3·5

(*B*) Spleen Rates of School Children in Selected Health Areas (Endemic Malaria)

Compared with (1) *A Healthy Area—Kalutara,* (2) *an Unsprayed Area—Urugala*

Selected Health Areas	*March 1938*	*March 1941*	*Sept. 1946*	*March 1947*	*Sept. 1947*	*March 1948*	*Sept. 1948*	*Date of Commencement of Spraying*
Anuradhapura	70·8	77·1	27·7	34·0	18·5	12·0	6·7	Oct., 1945
Hingurakgoda	81·4	93·8	—	22·3	15·1	8·8	7·7	Oct., 1945
Mannar	13·1	16·2	21·0	16·9	4·6	7·1	2·3	Sept., 1946
Kilinochchi	60·0	51·9	44·6	24·2	16·5	18·7	14·0	March, 1946
Chavakachcheri	26·1	22·5	14·4	5·2	5·8	2·4	0·6	March, 1946
Vavuniya	92·2	74·9	67·8	52·3	27·1	20·4	12·7	Sept., 1946
Bingiriya	58·0	90·8	48·5	61·8	40·1	13·9	4·5	July, 1947
Wariyapola	41·0	54·9	49·9	48·6	27·5	20·3	9·1	June, 1946
Gokerella	54·9	70·4	78·9	70·4	81·1	40·2	26·6	Oct., 1946
Puttalam	54·3	28·6	61·4	22·6	21·7	14·6	7·6	Sept., 1946
Mundel	85·8	54·8	48·5	45·6	30·2	23·4	8·6	Sept., 1946
Maho	68·1	62·5	42·4	32·8	32·0	21·3	21·5	June, 1946
Galgamuwa	78·1	63·2	59·5	59·4	61·9	48·9	32·1	June, 1946
Dambulla	65·6	75·3	48·3	27·1	30·1	21·3	15·5	July, 1946
Valaichenai	32·3	42·7	37·4	33·4	27·1	20·7	11·1	Oct., 1946
Walasmulla	58·6	67·4	70·9	68·7	35·0	67·3	21·5	Feb., 1946
Hambantota	49·2	58·4	47·3	50·8	32·1	19·4	7·6	Sept., 1946
Weeraketiya	70·4	87·3	71·4	70·1	35·0	31·9	25·0	Feb., 1946
Tangalla	81·1	71·3	25·4	13·3	5·4	2·2	3·1	Feb., 1946
Urugala	34·4	8·9	6·8	0·2	2·4	0·2	4·6	—
Kalutara	0·0	0·3	0·1	0·0	0·0	0·0	0·0	—

TABLE XLVI

Parasite Rates for the Island by Provinces 1938–48

Province	*March, 1938*		*March, 1939*		*March, 1940*		*March, 1941*		*September, 1946*		*September, 1947*		*March, 1948*	
	No. Exd.	*per cent. Pos.*	*No. Exd.*	*per cent. Pos.*	*No. Exd.*	*per cent. Pos.*	*No. Exd.*	*per cent. Pos.*	*No. Exd.*	*per cent. Pos.*	*No. Exd.*	*per cent. Pos.*	*No. Exd.*	*per cent. Pos.*
Western	2,682	0·6	3,473	1·4	3,396	0·8	3,588	0·6	2,946	1·1	3,758	0·08	3,733	0·02
Central	2,450	4·2	3,522	3·8	3,021	0·4	2,211	3·1	2,457	2·8	3,505	0·4	3,219	0·2
Southern	1,654	6·7	1,888	5·2	1,781	4·9	1,621	8·0	1,847	2·8	2,164	0·4	2,589	0·2
Northern	1,142	2·5	2,374	3·6	2,072	3·1	Not surveyed		2,975	2·5	2,253	0·7	2,279	0·5
Eastern	964	8·1	3,111	8·1	3,138	13·5	Not surveyed		2,634	4·5	2,030	1·6	1,534	2·0
North-Western	2,895	7·5	2,802	7·5	2,650	5·9	2,756	5·6	2,616	8·9	2,631	1·9	3,264	1·3
North-Central	465	8·2	1,374	11·4	920	11·3	Not surveyed		775	3·6	911	2·7	817	1·8
Uva	595	7·9	1,418	3·2	1,271	5·1	401	3·5	1,413	2·2	946	1·2	753	0·9
Sabaragamuwa	1,806	1·5	1,728	4·8	1,657	5·3	1,850	3·9	1,705	3·9,	1,931	1·1	1,871	0·2
Total	14,653	4·5	21,690	5·1	19,906	5·6	12,427	3·7	19,368	3·6	20,129	0·9	20,059	0·6

TABLE XLVII

Vital statistics for selected health areas (endemic malaria)

Compared with (1) a Healthy Area—Kalutara, (2) an Unsprayed Area—Urugala

Infant Death Rates

Selected Health Areas	*1941*	*1942*	*1943*	*1944*	*1945*	*1946*	*1947*	*1948*
Anuradhapura	270·0	277·3	337·4	220·0	245·1	169·3	161·3	84·3
Hingurakgoda	—	—	—	—	328·5	257·8	119·3	97·2
Mannar	216·0	174·0	228·0	198·0	251·0	305·0	135·0	94·0
Kilinochchi	163·0	254·5	246·1	287·7	243·6	131·0	90·9	77·0
Chavakachcheri	266·0	154·0	199·0	162·0	204·0	164·0	112·0	95·0
Vavuniya	292·0	385·0	289·0	387·0	350·0	194·0	170·0	129·0
Bingiriya	122·1	92·3	120·3	184·9	239·5	239·0	120·0	78·2
Wariyapola	136·5	126·0	199·6	252·8	298·5	373·4	138·0	105·7
Gokkarella	180·4	196·8	238·0	202·0	387·0	402·0	164·0	110·3
Puttalam	194·0	244·0	264·0	289·0	277·0	175·0	154·0	111·8
Mundel	265·0	253·0	323·0	351·3	304·0	206·9	171·3	108·0
Maho	185·0	171·0	225·0	271·0	348·0	263·0	178·0	114·0
Galgamuwa	208·0	185·0	237·0	274·0	317·0	301·0	235·0	110·0
Dambulla	150·7	161·1	169·6	192·2	230·2	289·0	109·0	94·0
Valaichenai	219·0	193·0	215·0	196·0	200·0	217·0	125·0	119·0
Walasmulla	260·0	134·0	244·0	205·0	164·0	430·0	135·0	92·7
Hambantota	320·0	277·0	340·0	297·0	234·0	316·0	122·0	118·0
Weeraketiya	108·0	111·0	130·5	123·8	123·0	304·5	97·0	64·0
Tangalla	316·0	169·0	204·0	199·0	165·0	251·0	84·0	81·5
Urugala	135·0	144·0	157·0	132·0	151·0	179·0	103·0	133·0
Kalutara	76·8	71·4	71·3	80·9	74·5	71·7	78·0	70·0

TABLE XLVIII

Vital statistics for selected health area endemic malaria)

Compared with (1) a Healthy Area—Kalutara, (2) an Unsprayed Area—Urugala

Malaria Death Rate per Million Population

Selected Health Areas	*1941*	*1942*	*1943*	*1944*	*1945*	*1946*	*1947*	*1948*
Anuradhapura	2,241	2,278	3,655	3,541	7,579	3,964	1,357	892
Hingurakgoda	—	—	—	—	5,600	3,481	1,191	453
Mannar	5,848	2,918	3,543	4,499	4,044	6,129	2,626	951
Kilinochchi	6,237	5,580	4,789	3,831	5,747	952	945	228
Chavakachcheri	4,964	2,933	3,463	3,702	2,356	2,400	1,694	785
Vavuniya	2,785	2,225	4,463	5,364	2,571	1,810	1,089	271
Bingiriya	—	—	—	119	149	3,248	1,849	1,035
Wariyapola	Correct data not available.							
Gokkarella	345	369	337	409	610	2,867	602	443
Puttalam	3,986	5,128	6,536	4,241	5,029	2,684	2,228	942
Mundel	5,501	8,157	8,355	7.579	7,856	3,485	1,958	1,211
Maho	4,101	3,926	5,232	5,786	8,130	4,870	3,180	1,610
Galgamuwa	92	180	—	—	—	557	129	251
Dambulla	431	1,149	796	788	1,442	4,658	1,027	616
Valaichenai	1,995	1,329	1,509	2,623	1,740	3,856	1,755	1,541
Walasmulla	2,174	2,994	2,485	2,103	1,266	3,372	1,674	860
Hambantota	3,920	4,600	14,904	15,577	10,618	9,752	6,621	4,979
Weeraketiya	4,077	3,107	6,809	6,295	4,743	10,813	1,577	897
Tangalla	5,951	2,440	1,706	2,409	1,329	3,682	1,856	748
Urugala	1,308	2,323	1,038	853	2,010	2,688	1,576	1,845
Kalutara	699	271	388	246	234	307	39	126

TABLE XLIX

Rainfall in the Catchment Area of Maha-oya and Deduru-oya for 1948

Compared with (1) Standard average for Years 1911 to 1940, (2) Previous Epidemic years

Monthly Rainfall

	Oct.	*Nov.*	*Dec.*	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May.*	*June*	*July*	*Aug.*	*Sept.*	*Total*
Standard average for 1911–1940	14·2	12·6	6·7	5·0	2·2	6·2	9·0	8·6	8·4	5·4	4·5	6·1	88·9
Monthly rainfall, October, 1938–September, 1939	5·2	4·6	4·5	6·7	0·2	2·7	15·7	7·9	8·1	6·8	10·8	4·6	77·8
Monthly rainfall, October, 1942-September, 1943	9·6	5·7	13·8	3·7	2·1	2·6	6·6	20·3	8·1	3·4	4·1	2·3	83·4
Monthly rainfall, October, 1947-September, 1948	12·4	2·4	6·0	2·7	0·7	8·5	5·8	4·2	9·3	5·1	4·9	1·7	63·7

Malaria Morbidity in the Catchment Area of Maha-oya and Deduru-oya for 1948

Compared with (1) Standard average for non-epidemic years, (2) Previous Epidemic years

Monthly Malaria Morbidity

	Mar.	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*	*Jan.*	*Feb.*
Monthly average for non-epidemic years	42,244	37,884	37,746	40,062	37,094	31,268	30,483	30,862	35,791	45,192	56,554	42,995
Monthly morbidity, March, 1939-February, 1940	57,472	79,384	185,912	204,694	140,825	80,833	57,533	48,417	45,846	59,144	57,978	40,548
Monthly morbidity, March, 1943-February, 1944	38,782	54,874	76,713	88,909	71,936	39,647	26,741	21,304	29,995	48,048	49,928	41,172
Monthly morbidity, March, 1948-February, 1949	17,740	17,652	23,370	20,426	18,293	14,057	11,468	10,807	11,858	11,969	—	—

TABLE L

Recurrent expenditure on malaria control organisation

Details	*1947* Rs. c.	*1948* Rs. c.
Salary and allowance of staff and subordinate officers	173,479 42	177,318 97
Wages	444,900 40	767,213 66
Travelling (Subsistence and batta)	32,042 42	73,255 03
Transport	90,136 80	114,061 60
Equipment and materials	1,390,488 56	2,700,283 08
Rent of stores and garage	328 78	737 20
Total	2,131,376 38	3,832,869 54

Number of applications in 1947	1,761,293
Cost per application in 1947	Re. 1·21 (Approx.)
Number of applications in 1948	3,359,457
Cost per application in 1948	Re. 1·14 (Approx.)

(ii) TUBERCULOSIS

With the control of Malaria, Tuberculosis has become the most serious medical and socio-economic problem in Ceylon. For many years the annual number of reported deaths from this disease has been between 3,500 and 4,000, but an estimation of the Island's Tuberculosis problem based on reported deaths will be erroneous as the actual death rate is undoubtedly higher. Many cases of Tuberculosis must at present remain undiagnosed owing to lack of diagnostic facilities in several parts of the Island, and the unfortunate stigma attaching to this disease makes many patients and their families reluctant to seek diagnosis and treatment. These two factors, in addition to the lack of notifications, must necessarily and materially lower the number of reported deaths from Tuberculosis.

A survey of a sample population, commenced in 1944 in the Urban Council area of Kotte, revealed a Tuberculosis morbidity rate of 2.2 per cent. of the population, and a death rate of 470 per 100,000 of the population, while the death rate from notified cases in this area has been between 60 to 80 per 100,000 for the last four years. The rates calculated from this survey are statistically applicable only to Kotte, and cannot be applied to the Island as a whole. The great difference however between the two rates gives reasonable ground for the assumption that the actual Tuberculosis death rate for Ceylon is much higher than the official rate for 1948, which was 57.5 per 100,000. It is reasonably calculated that while there are at least 70,000 persons in Ceylon suffering from open pulmonary tuberculosis, the actual number of total cases is over 100,000.

Before the magnitude of the tuberculosis problem in the Island was fully realized and the major importance of preventive activities appreciated, reliance was placed only on treatment, and the Anti-Tuberculosis Institute was inaugurated in 1915, with two institutions attached to it, viz.: the Kandana Sanatorium for early cases and the Ragama Chest Hospital for more advanced cases. A further Sanatorium, for early cases, was opened at Kankesanturai in 1932, while a Chest Clinic at Jaffna was inaugurated shortly afterwards. Rules for admission were later changed, and admissions to these institutions now depend on the patients' preference and availability of accommodation, and not on the stage of the disease.

In 1941, with a growing realisation of the tuberculosis situation, steps were taken to reorganise and to extend the Anti-Tuberculosis Campaign. Plans were made for the training of officers abroad for tuberculosis work, for the purchase of additional equipment for diagnostic and therapeutic work, for the provision of more tuberculosis beds and for investigation and control measures.

The first batch of officers left the Island for training in 1942, and have been followed, since that date, by eight others.

Equipment, including X'Ray Machines and instruments and appliances for minor surgery, have been obtained for the use of institutions previously not provided with these facilities.

Chest Clinics were opened at Kandy and Galle in association with the Hospitals in these areas in 1947, and special wards were provided for the cases in each Hospital. A large number of additional beds were provided by the opening of Welisara Hospital in 1946, and the allocation of a part of Keerimalai Hospital for the patients in 1948. In addition to beds made available in certain other Civil Hospitals, there is now hospital accommodation for a minimum of 1,685 T.B. patients in Ceylon, distributed as follows:—

T. B. Institutes		*Civil Hospitals*	
Ragama	465	Galle	52
		Kandy	31
Welisara	600	Keerimalai	125
Kandana	146	Karawanella and Eheliyagoda	24
Talagolla	35	Undugoda	31
Kankesanturai	84	Hambantota	12
		General Hospital, Colombo	80

A Tuberculosis survey was organised and put into operation in 1944, to investigate conditions in the Kotte area, and to ascertain the tuberculosis infection, morbidity and mortality rates in that area, and the factors influencing these rates. Control measures were subsequently commenced in this area, and are being developed.

The post of Superintendent, Tuberculosis Campaign, was created in 1945 for the co-ordination, control and development of Anti-Tuberculosis work.

Apart from the Superintendent of the Campaign, seven Medical Officers and seven Assistant Medical Officers were engaged in the Tuberculosis Campaign during the year, in addition to Nurses (including a Public Health Nurse), X'Ray and laboratory personnel, clerks, a Sanitary Inspector, and members of the minor staff.

Two Medical Officers were abroad on post-graduate courses, one in the United Kingdom and one in India. Two of the Assistant Medical Officers will receive post-graduate training in India next year.

See page 92 for Table.

(A) *Diagnosis and Treatment.*—A material increase in the number of patients attending Chest Clinics and Dispensaries, and subsequently seeking hospitalisation, reflects the increasing awareness of the tuberculosis problem by members of the public.

REGISTRAR-GENERAL'S REPORTS

T. B. Deaths registered in Ceylon	*1947*	*1948*
Tuberculosis of the Respiratory System	3,510	3,771
Tuberculosis of the other organs	322	279
Disseminated Tuberculosis {Acute Chronic}	10	22
Total deaths from Tuberculosis	3,842	4,072

TABLE L1—Personnel

Institution	Major Staff															Minor Staff														
	1 Medical Officer	2 Asst. Medical Officers	3 Matrons	4 Mother Superiors	5 R. N. Sisters	6 Nurses	7 Public Health Nurses	8 X'Ray Technicians	9 Apothecaries	10 Sanitary Inspectors	11 Hospital Clerks	12 Laboratory Assistants	13 Telephone Operators	14 Seamstresses	15 Stewardess	16 Male Attendants	17 Female Attendants	18 Engine Drivers	19 Boilermen	20 X'Ray Attendant	21 Laboratory Cleaners	22 Nurses' Cooks	23 Cooks	24 Nurses' Ayahs	25 Orderlies	26 Peons	27 Watchers	28 Gate-keepers	29 Labourers	30 Overseers
Ragama	1	1	—	1	12	—	—	1	2	—	2	1	—	—	—	51	15	1	1	—	—	—	8	1	3	—	1	1	27	2
Kankesanturai Sanatorium ..	1	—	1	—	—	5	—	—	—	—	—	1	—	—	1	13	12	—	—	—	—	—	4	1	1	—	—	—	14	1
Kandana	1	1	1	—	—	4	—	—	1	—	1	—	—	—	1	13	9	—	—	—	—	—	2	2	1	—	1	2	19	—
Welisara	1	3	1	—	6	12	—	1	2	—	4	1	3	1	1	52	24	—	—	1	2	2	13	2	5	1	6	4	48	3
Chest Clinic, Galle ..	1	1	1	—	—	—	—	—	1	—	—	—	—	—	—	2	1	—	—	—	—	—	—	—	—	1	—	—	1	—
Talagolla	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	6	3	—	—	—	—	—	—	—	—	—	1	—	5	—
A. T. I.	1	1	1	—	—	—	—	2	1	—	2	1	—	—	—	5	—	—	—	1	—	—	—	—	1	—	1	—	4	—
Superintendent's Office ..	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—
Medical Officer T. B. Survey	1	—	—	—	—	—	1	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—
Total ..	8	7	5	1	18	21	1	4	8	1	11	4	3	1	3	142	65	1	1	2	2	2	27	6	11	4	10	7	118	6

TABLE LII

TUBERCULOSIS STATISTICS

Hospital in-Patients

Type of Disease	*1947*		*1948*	
	Cases	*Deaths*	*Cases*	*Deaths*
1. Pulmonary Tuberculosis	7,814	1,871	10,114	1,992
2. T. B. Meninges or Central Nervous System	178	39	146	53
3. T. B. of Intestines or Peritoneum	156	25	136	41
4. T. B. of Vertebral Column	38	3	35	1
5. T. B. of Bones and Joints	79	4	81	4
6. T. B. of other organs :				
(*a*) Skin or Subcutaneous Tissue	32	2	23	—
(*b*) Bones	5	—	24	1
(*c*) Lymphatic System	229	2	268	3
(*d*) Genito-Urinary	31	—	24	—
(*e*) Other Organs	41	1	47	1
7. T. B. disseminated :				
(*a*) Acute (*b*) Chronic	79	8	130	15
Total	8,682	1,955	10,928	2,111

Dispensaries out-Patients

	1947	*1948*
Pulmonary Tuberculosis (cases)	777	3,748

Tuberculosis of the lungs continues to be the chief manifestation of the disease, and comparatively few cases of extra-pulmonary tuberculosis have been found. The large potential reservoir of infection provided by open cases of pulmonary tuberculosis continues to remain the most important factor in the spread of the disease. Hospital bed strength, in spite of the recent additions, still falls short of the total of approximately 7,000 beds required on a basis of one bed per 1,000 population, and some inevitable overcrowding of tuberculosis institutions has been caused as a result.

The percentage of deaths to cases treated in T.B. Hospitals was 20.3 The figures for Kankesanturai and Kandana are low, as the majority of patients in these institutions are in the earlier stages of the disease. The rates for Talagolla and Galle are low as patients, owing to limited accommodation, can only spend comparatively short periods in these institutions.

INSTITUTIONAL TREATMENT

	Welisara	*Ragama*	*Kandana*	*K.K. S*	*Tala-golla*	*Galle Civil Hospital*	*Total*
	1948	*1948*	*1948*	*1948*	*1948*	*1948*	*1948*
Remained at the beginning of	347	403	129	82	29	80	1,070
Admitted	1,449	859	223	90	41	332	2,994
Died	483	270	42	7	9	14	825
Discharged	699	523	206	85	30	318	1,861
Remaining at the end of	614	469	104	80	31	80	1,378
Percentage of Deaths to total treated	26·8	21·4	11·9	4·07	12·8	3·4	20·3

(B) *Investigation and Control.*—Epidemiological and field control measures were continued during the year in the survey area of Kotte, and were also carried out in Kalutara and among certain groups in Colombo. The infection rate of 61.5 per cent. in the survey area showed no increase over the rate determined for previous years, indicating that, in this area, the reservoir of potential infection had not increased, and that control measures are taking effect. Collection of environmental data confirmed the previous findings that contact, overcrowding and a low income level were the principal factors predisposing to disease.

The investigations carried out in a school group at Kalutara revealed a more than moderate infection rate, while a high rate was found in the Colombo groups. In each of these groups the morbidity rate was related to the rates found in Kotte (2.85 per cent. for primary disease and 2.2 per cent. for pulmonary tuberculosis).

Tuberculosis control, in the areas not served by Tuberculosis Officers, continued to be carried out, with necessary limitation due to lack of diagnostic facilities and specialist advice, by the Medical Officers of Health; and consisted of Health Education, regular home visits to contacts, and supervision of non-hospitalised patients either in their homes or in T.B. booths. In addition, under the consultation clinic scheme, cases and contacts were sent by Medical Officers of Health within thirty miles of T.B. clinics, to these institutions for examination and advice, once a month.

TABLE LIII

T. B. Survey—Survey of Work Done

Mautoux Tests	*Routine survey cases*	*Holy Cross College*	*Police Training School*	*D.M & S.S. office and House of Representatives office*	*Total 1948*	*Total 1947*
Number fully investigated	999	693	275	168	2,135	1,431
Number positive to 1st	316	50	158	118	642	191
Number positive to 2nd	299	237	62	33	631	365
Number negative to both	384	406	55	17	862	875
Number partially investigated	119	82	2	29	232	290
Total number of T. T.	1,349	1,459	508	246	3,562	2,396
Percentage positive	61·56	41·41	80·00	89·88	59·63	38·85

Number of Persons X'Rayed

	Number of Persons X'Rayed		*Number of X'Rays taken*	
	1947	*1948*	*1947*	*1948*
Routine Survey Examination	555	600	577	632
Contacts	369	473	424	510
Lung Cases	104	145	144	203
Gland Cases	107	167	116	184
Others	86	30	95	30
Holy Cross College, Kalutara	—	224	—	229
Police Training School	—	46*	—	46*
Total	1,221	1,685	1,356	1,834

* In addition 123 were screened.

TABLE LIV

Kotte Survey Area and Field Investigations

Statement of cases found and notified

(A) *Kotte Survey Area* :—(Population 36,000)

Cases found—Adult type Pulmonary Tuberculosis	45
Primary Tuberculous Disease	68
Cases Notified—Adult type Pulmonary Tuberculosis	9
Primary Tubercular Disease	—
Number of known deaths from Tuberculosis	31

(B) *Police Group* :—

Number of adult type cases	4
Morbidity rate	2·3 per cent.

(C) *School Group in Kalutara* :—

Number of cases of primary disease	30
Morbidity rate	3·8 per cent.

Plan of work for the Future

(1) The provision of full facilities at the Anti-Tuberculosis Institute for preventive work in addition to the clinic facilities already available.

(2) The establishment of a B. C. G. Bureau at the Darley Road Clinic and the commencement of a B. C. G. Vaccination Campaign in Colombo. Three teams will be provided for this purpose, each composed of a medical officer, a nurse and a clerk. Arrangements have been made with the International Tuberculosis Campaign for the provision of Tuberculin and B. C. G. Vaccine from South India, the appointment of a demonstration team and the supply of the necessary equipment.

(3) The establishment of a Mass Radiography Centre at Darley Road. The Mass Radiography Unit has already been obtained, and after the necessary structural alterations have been made at the Darley Road Clinic, the Mass Radiography Scheme will come into operation.

(4) The development of a Tuberculosis Central Scheme for Colombo, after the absorption into the Department of the Municipal Health Visitors.

(5) The establishment of a clinic at Darley Road to deal with cases from Colombo South, the cases from Colombo North to be dealt with by the Anti-Tuberculosis Institute.

(6) The provision of additional beds for T. B. cases, up to a minimum total of 7,000. Some of these beds will be provided in the near future at Puttalam (in a converted R. A. F. Hospital of 100 beds) and at Wirawila (where buildings at present exist belonging to the Agricultural Corps).

(7) The training of Medical Officers of Health, Public Health Nurses and Sanitary Inspectors in Tuberculosis field work and routine epidemiological investigation.

(8) The establishment of a Central T. B. Registry at the Anti-Tuberculosis Institute.

The measures at present carried out for the control of Tuberculosis consist of epidemiological investigations, preventive measures and curative work and may be summarised as follows:—

Epidemiological Investigations

Tuberculosis Testing, X-Ray examination of population groups, with collections of individual data relating to environmental hygiene.

Preventive Measures

(i) Health education.
(ii) Specialist contact examination by Tuberculosis Officers.
(iii) Non-Specialist contact examination by Medical Officers of Health.
(iv) Intensive control measures in the Kotte Survey area.

Curative Measures

(i) Provision of 1,330 beds in T. B. Institutions and 335 in civil hospitals, with minor surgery in T. B. institutions and major surgery in the General Hospital, Colombo, in addition to routine treatment, and special treatment with Streptomycin.

(ii) O. P. D. treatment at Chest Clinics, Hospitals and Dispensaries.

(iii) VENEREAL DISEASES

Anti-Venereal work as such was started in Ceylon subsequent to the recommendations of the V. D. Commission which arrived in this Island in May, 1920. After touring the country and meeting various sections of the people, they established a Ceylon National Council for combating V. D. affiliated to its counterpart in Great Britain. They addressed influential local organisations on the subject of V. D. They distributed free a part of the publicity material brought by them and a part was bought by the Medical Department. The

Planters' Association of Ceylon prominently identified itself with the activities of the Commission as they felt that there was scope for this work among the labourers. The National Council requested the Government to take action upon lines indicated by the Commission which were as follows:—

(1) That facilities for treatment of V. D. should be made available for all people.
(2) That propaganda, having for its object public enlightenment on the great amount of damage done to the community, should be undertaken.
(3) That after facilities had been provided for treatment and the public had become acquainted with the danger of these diseases the Government should be requested to make notification compulsory.

The visit of the Commissioners and the efforts of the National Association on V. D. resulted in the following achievements:—

(1) A clinic was opened in the Port of Colombo in 1921 for the treatment of seamen.

(2) A clinic was established at the Branch Hospital, Colombo, for the treatment of women and children on two afternoons in the week. Another clinic was established at the Out-Patients' Department, General Hospital, Colombo, for the free treatment of males on two afternoons in the week.

A new scheme formulated in 1936 and given effect to in 1938 included the following:—

(1) Training of an officer in curative and sociological work.
(2) Bringing all sections of the curative organisation as regards V. D. work under one control.
(3) Establishing clinics in the outstation hospitals and dispensaries, training of personnel, provision of accommodation, staff, &c.
(4) Publicity to be put on proper lines.

With the inauguration of the new control scheme a visiting Surgeon of the General Hospital, Colombo, who is a fellow of the Royal College of Surgeons (England) was trained abroad and appointed in charge of this division in 1939. A Departmental Committee with the D. M. & S. S. as Chairman was set up to decide the future policy of the V. D Campaign. The Surgeon-in-Charge was entrusted with the carrying out of the V. D. control programme of the department and the organisation and supervision of V. D. Clinics.

Facilities for Treatment

The existing clinics in Colombo were improved to provide treatment throughout the week. Two visiting clinics were opened in Colombo—one in the harbour premises solely for the treatment of the labour population in the harbour area and the coal grounds and the other in the Vagrants Home where vagrants of the city of Colombo are detained on the orders of the Magistrate. The home is run by the Salvation Army who afford all facilities for the treatment of its inmates. With a view to making treatment available in all parts of the Island new clinics were established in the provincial and central districts hospitals, some dispensaries and health centres. New buildings were put up where necessary to provide accommodation for the treatment of V. D. They were provided with adequate laboratory facilities and equipment.

II—STAFF

(a) *V. D. Clinic, General Hospital, Colombo*

(1) Visiting Surgeon.
(2) Three Medical Officers.
(3) Two Apothecaries.
(4) One Laboratory Assistant and one Clerk.
(5) Follow-up workers: (One Supervising Sanitary Inspector; one Sanitary Inspector.)

(*b*) Branch Hospital, Colombo
  (1) Medical Officer.
  (2) Follow up work: Acting Nurse.
(*c*) Outstation Clinic run by part-time officers.

Thirty-seven Medical Officers were trained fully or partly since 1942. The number trained with period of training is as follows:—

Six	Three months
Three	One month
Ten	Two weeks
One	Nine days
Five	One week
Ten	Three days
Two	One day

V. D. Clinics are being run in 45 places. It is regrettable to find that at the time of writing this report only one clinic is manned by a fully trained Medical Officer.

Two Sanitary Inspectors have been trained and posted to Jaffna and Galle.

TABLE LV

Statement of attendance at the V. D. Clinic, General Hospital, Colombo:

Year	*First Visits*	*Subsequent Visits*	*Total*
1940	5,183	20,729	25,912
1941	4,951	26,254	31,205
1942	3,340	24,787	28,127
1943	3,132	30,831	33,963
1944	3,074	32,258	35,332
1945	2,786	31,567	34,353
1946	2,572	37,296	39,868
1947	2,927	45,065	47,992
1948	3,086	51,701	54,787

The first visits for 1947 were 2,927 and for 1948, 3,086. The increase in 1948 over 1947 is 159. The subsequent visits during the same period is, 1947, 45,065; 1948, 51,701. The increase in 1948 over 1947 is 6,636. This shows a steady improvement since follow up was started.

TABLE LVI

Statement of attendance at the V. D. Clinic, Branch Hospital, Colombo

Year	*First Visits*	*Subsequent Visits*	*Total*
1942	2,388	9,278	11,666
1943	2,487	12,903	15,390
1944	2,408	12,661	15,069
1945	2,389	9,944	12,333
1946	1,946	10,129	12,075
1947	1,788	10,254	12,042
1948	2,072	12,608	14,680

Follow up work at this clinic is very poor. The number of subsequent visits per head is only six as compared with the male clinic where it is seventeen. The number of new cases in the male clinic is 3,086 as compared with 2,072 at the female clinic but the subsequent visits are 51,701 (male) against 12,608 (female). The discrepancy between the number of men and women seeking treatment at the two clinics indicates that a large number of infected women need treatment.

TABLE LVII

Statement of attendance at the V. D. Clinics, Outstations

Year		First Visits		Subsequent Visits		Total
1942	.. ..	5,774	..	21,280	..	27,054
1943	.. ..	10,897	..	41,165	..	52,062
1944	.. ..	12,318	..	44,892	..	57,210
1945	.. ..	10,340	..	42,479	..	52,819
1946	.. ..	9,288	..	39,797	..	49,085
1947	.. ..	5,798	..	43,229	..	49,027
1948	.. ..	6,749	..	42,934	..	49,683

The figures at the outstation clinics indicate a drop in attendance. The fault is due to the fact that no trained personnel are in charge of the clinics now. Further no follow up work is done at these clinics.

TABLE LVIII

Statement of attendance at the V. D. Clinic, Badulla

Year		First Visits		Subsequent Visits		Total
1942	.. ..	604	..	4,958	..	5,562
1943	.. ..	679	..	5,178	..	5,857
1944	.. ..	330	..	2,510	..	2,840
1945	.. ..	501	..	1,244	..	1,745
1946	.. ..	582	..	1,123	..	1,705
1947	.. ..	236	..	1,597	..	1,833
1948	.. ..	216	..	1,770	..	1,986

When V. D. work was started at this station the clinic was placed under trained medical officers up to June, 1944. During this period a progressive increase in the attendance was a marked feature. Since then the clinic has been in charge of untrained personnel and a marked drop in the figures is shown in the above Table. The value of trained personnel is clearly called for in manning the V. D. Clinics in the Island.

(iv) FILARIASIS

Filariasis had been known to occur for some decades in the Southern seaboard town of Galle, but the first Island-wide survey was carried out during 1937-1939 as a result of the detection of a large number of cases of filariasis in certain localized areas in the North-Western Province, where the disease was unknown previously.

Filariasis is still very localized in Ceylon and its incidence is mainly restricted to areas offering favourable facilities for the prolific and perennial breeding of the necessary types of insect vectors.

Both types of Filarial infection, *Wuchereria Bancrofti* and *Wuchereria Malayi* are present. Malayi type, which is the most predominant, is entirely restricted to areas which offer facilities for heavy breeding of Mansonia mosquitoes. These areas are usually associated with heavy infestations of floating water plants mainly Pistia stratiotes, found at the estuaries of the rivers such as Mahaveli-ganga, Bentota river, Gin-ganga and Nilwala-ganga, and also in the tanks in the North-Western Province and Hambantota District. Bancroftian type is restricted to Colombo and suburbs, Galle and Matara where facilities are offered for heavy breeding of Culex fatigans, such as catch-pits near latrines and stagnant water collections.

During 1937-1939 survey, 11 endemic areas of Filariasis were detected in the Island, one of Bancrofitian type and the rest of Malayi type. Two out of the Malayi type endemic areas are fairly large, one is about 175 square miles and is associated with the tanks in the catchment areas of Kolomuna-oya in the North-Western Province, the other which is about 150 square miles is associated with tanks in the catchment areas of Urubokka-oya and Kirama-oya in the Hambantota District. Except these two large endemic areas associated with the tanks all the others are situated in the coastal belt of Ceylon. Survey work was started again in 1948 and during the short period a very large endemic area of Bancroftian Filariasis was detected in Colombo and the Urban Council areas of Dehiwala and Kotte.

All the endemic areas are below 500 feet elevation where optimum relative humidity and temperature are available for the transmission of the disease throughout the year.

The 12 endemic areas so far known are as follows:—

(1) In the Hambantota District, an area about 150 square miles in extent situated in the catchment areas of Urubokka-oya and Kirama-oya rivers is restricted to villages adjoining tanks with very heavy Pistia infestations. For all practical purposes this can be considered to be an area within 8 miles radius of the present bazaar of Weeraketiya.

(2) In the Matara District, an area of about 2 square miles in extent situated at the estuary of Nilwala-ganga; this is situated mostly within the Urban Council area of Matara.

(3) In the Matara District, in villages situated about one mile round Kamburugamuwa tank.

(4) In the Galle District, an area of about 16 square miles covering the Pistia infected regions at the estuary of the Bentota river.

(5) An area of about 2 square miles in extent covering the Pistia infected region of the Telwatte river.

(6) An Area of about 4 square miles in extent covering the Pistia infected region at the mouth of the Gin-ganga.

(7) An area of about one square mile in extent within Galle Town, covering the Pistia infected region to the east of Mahamodera lake and along Hume Road.

(8) An area of about 2 square miles, situated in the coastal region of Galle Town, between Moragoda-ela on the east and Havelock Road on the west, and where there are facilities for prolific breeding of Culex fatigans, such as stagnant drains and polluted water collections near houses associated with a congested population.

(9) In the North-Western Province, an area of about 175 square miles in extent situated in the catchment areas of Kolamunu-oya and Kadupitiya-oya restricted mainly to villages adjoining tanks with very heavy Pistia infestations. For all practical purposes this can be considered to be the area within 8 miles radius of the present bazaar of Hettipola.

(10) In Koddiyar Pattu, an area of about 10 square miles in extent covering the Pistia infested regions associated with Allai tank.

(11) In Tamankaduwa, an area of about 10 square miles covering the Pistia infested swampy regions to the east of Polonnaruwa.

(12) An area of about 12 square miles situated within the Urban Council limits of Dehiwala-Mt. Lavinia, Kotte and Wellawatta ward of the Colombo Municipality, where facilities exist for heavy breeding of Culex fatigans.

Outside the main 12 endemic areas mentioned above, 61 endemic foci more or less in the neighbourhood of the endemic areas had been detected in the 1937-1939 survey. Fifteen more such endemic foci have been defected since 1947.

During 1937-1939 in the whole Island 2,273 clinical cases and 1,773 microfilaria cases were detected. During 1948, 1,027 cases and 400 microfilaria were detected mainly in the suburbs of Colombo, Dehiwala and Matara.

All the usual clinical types associated with filariasis are found in Ceylon; the common ones are adenitis, lymphangitis, phlebitis, elephantiasis, hydrocele and orchitis. The commonest limb affected is the left leg. The genital symptoms such as orchitis and hydrocele are very common with bancroftian infection while affections of the limbs and glands are more common with the Malayi type.

During 1937-1939, between 10 p.m. and 12 midnight 13,000 blood films were taken in various parts of the Island and showed 1,773 positive for microfilaria, mostly Malayi. During 1947-1948 between 9 p.m. to 10 p.m. 5,690 blood films taken showed 400 positive for microfilaria mostly of Bancroftian type.

Between 1932 and 1938 the Medical Entomologist had dissected over 32,000 female mosquitoes of different species from various parts of Ceylon; and of these 454 were found to harbour *filaria malayi*, from seven endemic foci of *W. Malayi*. In the North-Western and Eastern Province 168 mosquitoes of 14 different species were found infected with filarias; nearly 70 per cent. of these mosquitoes were species of Mansoniodes (chiefly M. uniformis).

During 1947-1948, in Colombo and suburbs, 1,892 female mosquitoes were collected and dissected. 90 were infected with filaria. Of 1,166 collected from the houses 991 were C. fatigan and 87 (8.8 per cent.) harboured W. bancrofti larvae.

The main carrier of bancroftian type is C. fatigans and of the malayi type is Mansonia uniformis.

The main breeding places of Mansonia uniformis are the heavy infestations of Pistia stratiotes. The main breeding places of Culex fatigans are the catch-pits near latrines and polluted water collections near houses.

2. STAFF

The Staff consisted of one Medical Officer of Health, one Sanitary Inspector, two Laboratory Assistants and a Field Attendant. A clerk was appointed from October 12, 1948, and a nurse from October 17, 1948. The nurse, clerk, and the field attendant are temporary; others are from the permanent cadre of the Department.

Except for the Medical Officer of Health none of the staff had previous experience of Filariasis work. They all had to be trained in a very special type of work and will take some time before they are considered efficient for the work. More staff is required to cope up with the development of the work throughout the endemic areas.

3. WORK DONE DURING THE YEAR

Filariasis work, in all its aspects, investigation, treatment and Control, was developed and carried out on more intensive lines during the year.

Investigation

The areas investigated during the year were Colombo Municipality, Urban Council areas of Dehiwala, Kotte, Matara, Moratuwa and a few areas just outside these. The work consisted mainly of detection of clinical cases, location of infective foci of disease and the determination of insect vectors and their breeding places. In Matara work done was a re-survey and in other areas they were new surveys.

Clinical Cases

The following clinical cases were detected during the year:—

Colombo Municipality	*Dehiwala U. C.*	*Kotte U. C.*	*Matara U. C.*	*Other Areas*
151	478	107	232	59

Total: .. 1,027

The Main Clinical lesions detected were as follows:—

Elephantiasis of legs	416	Hydrocele	15
Lymphangitis of legs	508	Orchitis	8
Lymphangitis of arms	8	Epididymitis	12
Adenitis	58	Affection of the mammary glands	2
			1,027

The commonest lesion was the affection of lower extremities; left leg was the commonest limb affected.

Night Blood Surveys

5,690 blood films were taken in the night after 8.30 p.m., and out of them 400 (7 per cent.) were found positive for micro-filaria, most of which were of Bancroftian type. In Colombo, Dehiwala, Kotte, only the Bancroftian type was found; at Matara both the Bancroftian and Malayi types were found.

Night blood surveys were carried out in the following localities:—

1948

Place	*No. of Blood films taken*	*No. positive for micro-filaria*
Government School, Battaramulla	55	0
Balika Home, Wellawatta	149	13
Station Road, Nugegoda	15	1
Maya Avenue, Wellawatta	48	8
Vidyalaya, Kolonnawa	60	3
Ananda Vidyalaya, Kolonnawa	44	3
Maya Road, Wellawatta	2	0
Boys Industrial School, Wellawatta	61	4
Methodist School, Wellawatte	34	4
Government School, Havelock Town	83	1
Felsinger Town, Bambalapitiya	15	0
St. Thomas College, Kotte	59	3
Volkart Bros. Grandpass	43	3
Girton School, Nugegoda	32	2
St. Mary's School, Dehiwala	28	3
Methodist School, Dehiwala	33	3
Holy Family Convent, Dehiwala	24	2
Kandawatte Temple, Nugegoda	62	6
Government Mixed School, Attidiya	61	6
Christ Church School, Dehiwala	45	5
St. Mary's Church, Mattakuliya	37	6
Deaf, Dumb and Blind School, Ratmalana	238	1
St. John's Church, Grandpass	46	6
Christ Church Primary School, Dehiwala	48	1
Y. M. C. A., Dehiwala	88	10
Y. M. B. A., Nugegoda	33	4
Police Station, Mt. Lavinia	118	10
High Street, Wellawatta	34	2
St. John's School, Nugegoda	44	1
Prince College, Kotahena	45	4
Police Station, Dehiwala	92	6
St. Andrew's School, Mutwal	53	1
St. John's School, Mutwal	40	4
St. Thomas College, Mt. Lavinia	195	7
Cathedral Boys School, Kotahena	57	1
St. Andrew's Convent, Mutwal	12	1
Girls High School, Mt. Lavinia	70	6
Government Mixed School, Bloemendhal	17	3
Cathedral School, Kotahena	57	1
De Alwis Place, Mt. Lavinia	33	2
Deaf, Dumb and Blind School, Ratmalana	96	2
Girls High School, Mt. Lavinia	46	3
St. Rita's School, Ratmalana	54	5
Vanderwert Place, Dehiwala	36	3
St. Sebastian School, Moratuwa	47	1
Methodist School, Moratuwa	61	2
St. Mathias School, Moratuwa	64	0
Buddhagosha, Kalubowila	78	9
Sea Beach Road, Ratmalana	55	2
St. Anthony's School, Dehiwala	61	3
Sri Dharama School, Mt. Lavinia	41	8
Buddhist Girls College, Mt. Lavinia	67	5
Moratuwa Vidyalaya, Moratuwa	24	0
St. Peter's School, Moratuwa	38	0
Sri Dharmadoya School, Ratmalana	18	1
St. Michael's School, Moratuwa	45	0
Presbyterian Girls School, Dehiwala	10	0
Roman Catholic School, Katukurunda, Moratuwa	52	0
Church of Ceylon School, Moratuwa	33	0
Buddhist Theosophical Society Girls School, Karagampitiya	38	6
St. Anthony's School, Kadalana	37	0
Kawdana, Dehiwala	7	0
Cassia Avenue, Ratmalana	24	3
Young Men's Buddhist Association Dehiwala	16	3
Dehiwala Clinic	935	61
Matara	1,397	136
Total	5,690	400

In addition to the night blood surveys carried out in different localities on pre-arranged programmes after due local publicity there is now a special fixed day, Thursday night 8.30 p.m. to 10 p.m., where anybody can get blood examined in the night at the Dehiwala Clinic. This has become very popular and on an average about 30 persons present themselves for blood examination on Thursday night.

The distribution of the 400 micro-filaria cases is as follows:—

Colombo Municipality	*Dehiwala*	*Kotte*	*Matara*	*Other Areas*
79	156	26	136	3

Practically all the micro-filaria cases detected were either amongst familiar contacts of the patients or in their immediate neighbourhood.

Clinical cases detected in all the areas investigated	1,207
Micro-filaria cases	400
Total cases of Filariasis	1,607

The re-survey which is now being carried out in Matara has shown that Filariasis has increased very rapidly there during the last 10 years. The following figures are very interesting:—

Filariasis cases 1938 survey	*1948 Re-survey of 1938 cases*	*1948 survey new cases*	*Total cases at present*
94	43	325	368

	Per cent.
Micro-filaria percentage for Matara during 1938	5·3
Micro-filaria percentage for Matara during 1948	10

Intradermal Test

Intradermal test by using Antigen prepared from the Litomosoides Carinii, the Filaria worm of the Cotton Rat, has been carried out in 50 cases and it has been found very satisfactory in the detection of doubtful cases. It is proposed to use this test on an extensive scale.

Propaganda Work

The great importance of propaganda work in tackling the Filariasis problem has been fully recognized especially to win the co-operation of the public for night blood surveys and detection of early clinical cases. For this purpose 81 lantern lectures illustrated with slides depicting factors and problems connected with Filariasis were given in the areas worked. During the All Ceylon Health Exhibition a Filariasis section was organized for the benefit of the public.

Clinics

The necessity of a clinic for maintaining contact of the Filariasis patients with the Health authorities was felt and a fully equipped clinic has now been established at Dehiwala from March 18, 1948. The purpose of a Clinic is mainly educative; patients are afforded every opportunity to learn all factors connected with the disease and practise them diligently. The Clinic has been helpful to detect large number of cases amongst familial contacts and neighbours. It is very gratifying to note the large number of patients carry out personal mosquito prophylaxis, such as the use of mosquito nets and attention to breeding places in their own premises.

Originally the clinic at Dehiwala was held once a week, but due to increasing attendance now clinics are held three times a week at Dehiwala, Wednesday afternoon for females, Saturday for males and Thursday for special examinations.

All patients attending the clinic are given suitable treatment for the frequent attacks of invalidism they are usually subjected to.

The following Drugs were used at the Clinic during the year:—

" Anthiomaline " — Lithium Antimony Thiomalate
" Neostam " — Stibamine Glucoside
" Hetrazan " — Diethylcarbamy 1-4-methyl piperazine dihydrogen citrate
Streptococal preparations.

Hetrazan, the new filaricidal drug has been tried on 17 patients attending the clinic, 10 of whom had a very large number of micro-filaria in their blood at night. The drug was administered by the mouth in specified doses three times a day for 7 days. After the treatment was over, the patients were examined and three of them had only one or two micro-filaria in the whole film, while in the others the micro-filaria had completely disappeared. A large quantity of the drug has been ordered through the Ceylon Ambassador in America and it is proposed to use this drug on an extensive scale.

A Filariasis clinic has also been established at Matara since August 1948.

	Dehiwala Clinic	*Matara Clinic*
Number of clinics held during the year	52	22
Total number treated	454	200
Total number of treatments given	4,080	902
Number of blood counts done	56	—
Number of differential counts done	115	—

Control Measures

The measures for the control of insect vectors were started in a portion of Kotte Urban Council on April 1, 1948, and extended to Dehiwala and Matara Urban Councils on July 1, 1948.

The measures adopted were mainly against Culex fatigans, the carrier of Filaria Bancrofti, which is the prevalent type in the areas concerned. The chief breeding places were the catch-pits attached to dry earth latrines and other polluted collections of water near houses and trading premises.

The measures consisted mainly of D.D.T. spraying of infected houses once in six weeks and D.D.T. spraying of all organically polluted water collections within 100 yards of the infected houses. As the results obtained were not commensurate with the expenses of D.D.T. spraying of houses, anti-adult measures were suspended and anti-larval measures were intensified throughout the whole area of Kotte, Dehiwala and Matara Urban Councils. The work consisted of collection and disposal of water holding receptacles in the premises and spraying of all water collections and catch-pits with suitable larvicides once a week, along with the enforcement of the provisions of the mosquito diseases prevention regulations. Mosquito control measures were handed over to the respective Medical Officers of Health on November 20, 948.

Memoranda on Filariasis control measures have been submitted to the Chairmen of Kotte, Dehiwala and Matara Urban Councils. The work in these areas is now organized. The cost of control measures is met by the Central Government and the local authority in the ratio of 3-1.

The following anti-mosquito measures have been carried out during the year:—

	Dehiwala	*Matara*	*Kotte*
Number of catchpits treated weekly with D.D.T.	2,503	703	397
Number of premises cleared of water holding receptacles	1,937	766	—
Volume of water holding receptacles buried—cubes	627	3	—
Length of new drains cut (feet)	140	—	—
Number of excavations filled with tins and covered with earth	633	—	—
Number of other borrow pits filled up	44	14	—
Number of artificial ponds treated with D.D.T.	2,226	1,538	—
Number of houses sprayed with D.D.T.	747	344	74
Number of houses sprayed with Gammaxene	3	—	—
Number of houses sprayed with Malarial Giegy Spray	34	—	—
Number of premises cleared of rank vegetation	334	238	—
Area of rank vegetation cleared (Squares)	3,024	102	—

Plan for future work

The scheme of Filariasis Control Work depends on the detection of clinical cases and micro-filaria cases amongst the contacts and neighbours and adopting suitable measures to prevent repetition of infection, a factor now considered necessary to spread the disease both in the individual as well as in the locality. This is aimed at by treating all micro-filaria cases with suitable filaricides along with anti-mosquito measures to control the breeding of insect vectors.

The future programme is to carry out intensive work in all the endemic areas.

By extension of the propaganda work it is proposed to enlist the co-operation of the house-holders to carry out mosquito control measures in their own houses and surroundings, by training them in the value of personal mosquito prophylaxis and getting them to attend to the mosquito breeding places in their own premises regularly.

The knowledge that at least 30 microfilariae should be present in 60 cmm. of blood to make a mosquito infective had been put into use recently in the Virgin Islands, America, to upset the delicate balance of infection with a view of preventing the spread of disease. What is aimed at is the reduction of the microfilariae in the blood of man to subinfective levels for the mosquito host and the maintenance of the reduction for at least three months, which would prevent the next generation of mosquito getting infected, by the use of " Hetrazan ". The Government has ordered a large quantity of the drug and all endemic areas will be treated as early as possible.

Summary

Filariasis work in all its aspects, investigations, treatment and control are faced with very difficult problems. Being a socio-economic disease people are very reluctant to make the disease known to others except in last stages when very little could be done. Early stages when something could be done escape detection as it is not an easy matter to get people to consent for a blood examination in the night. The disease is still localized in the Island and with the intensive measures proposed to be carried out there will be no difficulty in eradicating this disease in a short time.

(E) MATERNITY AND CHILD WELFARE WORK

The importance of Maternity and Child Welfare Work in relation not only to the well being of the individuals but also to the national health is being increasingly realized. During the year 1948, as in previous years, special attention has been directed in greater measure to the problem of securing the highest standard of maternal care in all its aspects—antenatal, natal and postnatal.

The maternal death rate for the year is 8.3 per 1,000 live births and is the lowest figure recorded so far. The rate for 1947 was 10.6.

The steady and progressive work undertaken for the care of the infant is evinced by the fall in the infant mortality rate for 1948, to its lowest recorded level of 92 per 1,000 live births. This compares well with a rate of 101 of the previous year which until then was the lowest recorded. A sustained reduction of the Maternal Mortality rate and of the Infant Mortality rate has been maintained.

The supervision of the child from 1-5 years has not yet reached so high a level as in the case of the infant, though an attendance at the centres during 1948, of 72,861 is encouraging.

Personnel

Public Health Nurses	41
Midwives	918

The number of Public Health Nurses engaged in Maternity and Child Welfare work is 41 for the year as compared with 40 of the previous year. The number of Midwives in the health service of the Department is 918 as compared with 850 of the previous year, an increase of 68.

TABLE LIX

Health Centres

	1947	*1948*
1. Number of Health Centres	571	602
2. Number of Clinics held	16,588	20,488
3. Number under care :		
(a) Expectant mothers	263,922	306,295
(b) Infants	167,839	170,483
(c) Pre-School	124,924	131,333

	1947	1948
4. (*A*) *Visits to Clinics by :*		
(*a*) Expectant mothers	289,434	276,611
(*b*) Infants	199,141	236,894
(*c*) Pre-School	76,200	72,861
(*B*) *Work of Nurses :*		
(i) Number of Public Health Nurses	40	41
(ii) Number of homes visited	56,970	65,547
(iii) Number of visits to expectant mothers	37,764	36,122
(iv) Number of visits to infants	29,784	28,906
(v) Number of pre-school children	20,932	20,762
(*C*) *Work of Midwives :*		
(i) Number of midwives	850	918
(ii) Number of homes visited	1,061,229	1,273,916
(iii) Number delivered by midwives	65,967	72,408
(iv) Number sent to Hospital for delivery	10,896	18,078
(v) Number sent to Maternity Home for delivery	6,908	10,764
(vi) Number of postpartum visits	617,584	572,182
(vii) Number of maternal deaths	1,278	830
(*D*) *Maternity Homes :*		
(i) Number of Maternity Homes run by Government	58	71
Number of beds	557	766
(ii) Number of homes run by local Authorities	14	12
Number of beds	72	72
(iii) Number of homes run by private bodies	3	3
Number of beds	57	57
(ii) Number of cases admitted to all homes	14,795	22.736
(v) Number of deliveries	10,710	16,277
(vi) Number of live births	10,468	15,936
(vii) Number of maternal deaths	52	25
(viii) Number of infant deaths	188	212
(ix) Number of still births	242	341
(x) Number sent to hospitals	1,356	1,998
(xi) Number of destitute maternity cases transferred to hospitals	151	240
(xii) Amount spent on above	Rs. 213,340	Rs. 261,740
(*E*) *Hospital Deliveries :*		
(i) Number delivered in Rural and Cottage Hospitals	4,252	8,430
(ii) Number delivered in Estate Hospitals	3,706	4,264
(iii) Number in other Hospitals	27,565	29,974

Health Centres

Thirty-one new Health Centres were opened during the year, bringing the total number of centres to 602. The number of clinics held during the year rose from 16,588 in 1947 to 20,488 in 1948 an increase of 3,900. The number of expectant mothers under care rose from 263,922 in 1947 to 306,295 in 1948. The number of infants rose from 167,839 to 170,483 and the number of pre-school children rose from 124,924 to 131,333. There has thus been a substantial increase in the number of expectant mothers, infants and pre-school children under care as compared with the number during the previous year.

Clinic Visits

The number of expectant mothers who attended the Ante Natal Clinics was 104,696; the number of live births for the Island was 287,695 thus giving a percentage of 36.4 mothers who received ante-natal care. The number of visits paid by the expectant mothers to the clinics showed a fall of 4.4 per cent. as compared with the previous year. The fall in attendance may be attributed to the following reasons:—

(*a*) The conversion of some weekly clinics to fortnightly clinics, and
(*b*) The decontrol of textiles which were issued to expectant mothers through the clinics.

The number of visits paid by infants and pre-school children showed a rise of 19 per cent. and a fall of 4.3 per cent. respectively as compared with the previous year.

Public Health Nurses

There were 41 Public Health Nurses engaged in Maternity and Child Welfare Work. They worked directly under the supervision of the Medical Officer of Health and the number of home visits they made during the year under review was 65,547. These nurses have paid 36,122 visits to expectant mothers, 28,906 visits to Infants and 20,762 to pre-school children as compared with 37,764, 29,784, 20,932 of the previous year.

Midwives and their Work

The number of Midwives employed in Maternity and Child Welfare work was 918; they conducted 72,408 deliveries during the year, an average of 79 deliveries by each midwife per year or 7 deliveries per month. The number of home visits paid by midwives showed a rise from 1,061,229 in 1947 to 1,273,916 in 1948. The number of mothers sent to hospitals for delivery was 18,078 as compared with 10,896 of the previous year. The number of mothers sent to Maternity Homes for delivery also rose from 6,908 in 1947 to 10,764 in 1948. This it will be seen that out of a total of 287,695 live births in the Island, approximately 131,353 have been delivered either at Institutions or under the supervision of trained personnel, giving a rate of 46 per cent. of mothers who have received trained care. The number of postpartum visits made by the midwives is 572,182 and the number of maternal deaths among mothers looked after by them fell from 1,278 in 1947 to 830 in 1948, a decrease of 35 per cent.

Maternity Homes

The number of Maternity Homes run by Government for the year under review was 71 with 766 beds, the number of Maternity Homes run by Local Authorities was 12 with 72 beds and the number run by private bodies was 3 with 57 beds. The total number of admissions was 22,736 and 16,277 mothers were delivered normally. The deliveries were conducted by the midwives under the supervision of the Public Health Nurse wherever Public Health Nurses were available. The death rate of mothers during the period that they were in the institutions was 1.6 per 1,000 live births. It is the intention of the Government to provide at least 10 new Maternity Homes each year until the needs of all the areas are met.

Health Education and Propaganda

This is generally carried out according to an advance programme drawn by each Medical Officer of Health for his area. It is carried out by the staff daily on their routine visits at the homes by giving simple advice, by group talks at the Health Centres and Maternity Homes, by public lectures, by lectures illustrated with lantern-slides and cinema in schools and by Health Exhibitions.

Ancillary Service

Ambulances for transport are beng provided so as to enable any emergency case being transported to the nearest hospital. At present there are 48 ambulances and with the proposal to add to the list another 24, the service will be further improved.

Milk Feeding Centres

These Centres are playing a useful part in the dietary of the pregnant mother. They are established by the Department of the Food Commissioner, but this Department Co-operates very closely with this work. Out of a total of 3,500 Milk Feeding Centres 192 are located in our Health Centres.

Occupational Therapy

A systematic attempt is made to train the mothers in Maternity Homes in useful occupational work which, while keeping them busy in the Maternity Home during their stay, teaches them some means of improving their family economy as well as the elements of infant care and general hygiene. This is very much appreciated by the mothers and efforts are being made to organize the work on an island-wide basis.

(F) SCHOOL HEALTH WORK

The primary objective in school health work is the examination of the school children in the first, fourth and seventh standards. The number of schools existing in the Island is 6,028 of which 3,390 have been visited and the children examined. The inability to take up all the schools is due to the inadequacy of the necessary personnel. The department is doing its utmost to provide the necessary staff so that it will be possible to afford 3 medical examinations during the school career of a child and to see that the defects are corrected as far as possible.

Personnel

The personnel engaged in school health work during the year 1948 is given in the table below.

Table LX

Province	*Medical Officers of Health*	*School Medical Officers*	*District Medical Officers*	*Woman Medical Officers*	*School Health Nurses*
Western	18	4	2	—	6
Central	14	2	3	—	1
Southern	14	2	2	1	—
Northern	7	1	3	1	1
Eastern	4	—	2	2	—
North-Central	3	—	1	—	—
North-Western	16	—	1	1	—
Uva	3	—	3	—	—
Sabaragamuwa	13	—	1	—	—
Total	92	9	18	5	8

Schools and School Population

There are, excluding unregistered and special type schools, 6,028 schools in the Island and the school population is estimated at 1,177,695. The total number of schools in which school health work has been carried out during the year under review is 3,390 as compared with 2,929 during the previous year. Of these, 1,397 were Primary, 1,869 Junior Secondary, 46 Central, 63 Collegiate and 15 Training. The schools were distributed by provinces as follows:—Western 1,230, Central 263, Southern 429, Northern 499, Eastern 108, North-Central 44, North-Western 440, Uva 105 and Sabaragamuwa 274.

The school population dealt within these schools under review is 107,271 of which 60,968 are boys and 46,303 are girls. 38,844 are in primary schools, 55,409 in secondary, 3,770 in central, 8,534 in collegiate and 714 in training.

The school population dealt with is classified by provinces as follows:—Western 22,219, Central 15,221, Southern 17,833, Northern 11,632, Eastern 6,479, North-Central 2,057, North-Western 12,066, Uva 2,823 and Sabaragamuwa 16,941.

Activities carried out

3,390 schools were visited for purpose of medical inspection by Medical Officers of Health and other staff engaged for this work.

Table LXI

Scholars examined

Province	*Total*	*Boys*	*Girls*	*Primary*	*Secondary*	*Central*	*Collegiate*	*Training*
Western	22,219	11,439	10,780	4,268	14,146	703	2,644	458
Central	15,221	8,663	6,558	7,370	5,272	300	2,190	89
Southern	17,833	11,069	6,764	4,704	10,936	1,528	628	37
Eastern	6,479	4,290	2,189	4,004	2,297	178	—	—
Northern	11,632	6,479	5,153	5,909	3,825	—	1,898	—
North-Central	2,057	1,175	882	969	886	27	175	—
North-Western	12,066	7,114	4,952	3,646	8,308	112	—	—
Sabaragamuwa	16,941	8,850	8,091	6,597	8,302	913	999	130
Uva	2,823	1,889	934	1,377	1,437	9	—	—
Total	107,271	60,968	46,303	38,844	55,409	3,770	8,534	714

TABLE LXII

Schools visited for Medical Inspection of Children

Province	*Schools Examined*	*Visits*					*Number of Defective Children*	*Percentage Defective to scholars examined*	*Number of Defects*	*Defects per Defective child*
		1st	*2nd*	*3rd*	*Special*	*Total*				
Western	1,230	18,900	3,465	981	54	23,400	18,313	82·5	30,732	1·7
Central	263	17,007	1,488	345	117	18,957	12,236	84·6	17,804	1·5
Southern	429	12,091	1,323	453	—	13,867	11,408	63·9	22,448	1·9
Eastern	108	352	153	607	—	1,112	1,259	19·4	2,399	1·9
Northern	497	568	200	572	28	1,368	2,572	22·8	6,949	2·7
North-Central	44	1,218	102	26	—	1,346	484	23·5	1,289	2·7
North-Western	440	5,159	297	48	21	5,525	5,721	47·4	14,667	2·6
Sabaragamuwa	274	3,192	241	42	27	3,502	2,542	15·0	5,585	2·2
Uva	105	1,705	54	—	—	1,759	1,976	64·4	3,783	1.9
Total	3,390	60,192	7,323	3,074	247	70,836	56,511	52·7	105,656	1·9

The defects per defective child is 1.9 and is higher than the figure for 1947 which was 1.6. Though this increase is very slight it is understood that the facilities available for the correction of some of the defects at least have not been taken advantage of fully. With the active co-operation of the teachers and the local Medical Officers, it should be possible to correct a large number of defects.

The examination of school children by different categories of Medical Officers is shown in the table.

TABLE LXIII

Number of scholars

Province	*Medical Officers of Health*	*Scholars Medical Officers*	*Woman Medical Officers*
Western	19,153	2,517	22,219
Central	17,219	2,984	398
Southern	9,515	6,027	—
Eastern	2,396	—	83
Northern	—	5,632	—
North-Central	3,910	—	—
North-Western	9,495	—	—
Sabaragamuwa	3,452	—	447
Uva	1,355	—	469
Total	66,495	17,160	23,616

Correction of Defects

The following tables give the types of defects detected at the medical inspection of school children. The percentage each defect forms to total defects, the number of defects of each kind by provinces, defects corrected and their percentages and the number of each defect corrected at medical inspections in different provinces are shown.

(For Tables see pages 110 and 111)

Hookworm Infestation

As usual this disease tops the list of defects found on medical inspection. 19.8 per cent. of the scholars examined disclosed this defect, and this disease formed 20.1 per cent. of the total defects.

The reduction of hookworm infestation during the growing period of life is of primary importance. 176,466 children were treated during the year 1948. The diagnosis of the condition among school children is based on clinical examination and there is likely to be a great margin of error in the method of diagnosis.

The fact that 19.8 per cent. of the children are diagnosed to be suffering from this condition and that it accounts for 20.1 per cent. of all the defects is a clear indication that there yet remains to be done a great deal of work for control of this insidious disease. Treatment of hookworm disease is necessary but the permanent measures for its control are the construction, maintenance and the use of sanitary latrines.

The following defects found at the medical inspections were as follows in order of the magnitude of prevalence.

TABLE LXIV

Defects	*Percentage to Scholars Examined*	*Percentage to Total Defects*
Hookworm	19·8	20·1
Teeth and gums	19·7	20·0
Malnutrition	12·9	13·2
Anaemia	12·5	12·7
Unvaccinated	7·0	7·1
Pediculosis	5·7	5·9
Adenoids and tonsils	4·1	4·2
Uncleanliness	3·6	3·7

The above types of defects account for 86.8 per cent. of the defects detected during the course of medical inspection of scholars.

TABLE LXV

Defects Found

Defect	*Total*	*Percentage to Total Defects*	*Western Province*	*Central Province*	*Southern Province*	*Northern Province*	*Eastern Province*	*North-Western Province*	*North-Central Province*	*Uva*	*Sabara-gamuwa*
Malnutrition	13,913	13·20	3,545	2,401	4,476	434	176	967	299	983	632
Uncleanliness	3,880	3·70	1,327	837	499	288	106	265	77	412	69
Unvaccinated	7,543	7·10	2,710	1,315	1,274	481	256	712	87	137	571
Eyes	601	0·57	432	6	78	17	—	—	15	—	53
Ears	169	0·15	76	56	22	5	2	—	2	1	5
Defective Vision	848	0·82	470	276	40	48	10	—	1	—	3
Defective Hearing	42	0·04	26	11	1	1	1	—	1	—	1
Enlarged Glands	299	0·28	53	—	234	4	2	—	4	1	1
Enlarged Spleens	83	0·07	—	9	8	7	—	29	—	30	—
Lymph Glands	46	0·04	36	10	—	0	—	—	—	—	—
Dental Carries	764	0·72	219	177	—	46	—	95	213	14	—
Teeth and Gums	21,116	20·00	5,598	2,859	1,647	746	158	8,446	104	240	1,318
Nose	544	0·51	60	469	8	5	1	—	—	—	1
Adenoids and Tonsils	4,389	4·20	1,173	455	367	1,321	95	311	40	485	142
Anaemia	13,430	12·70	2,724	2,008	4,969	1,319	500	989	212	295	414
Heart	62	0·05	24	—	12	15	—	—	3	2	6
Lungs	107	0·11	76	9	10	3	—	—	8	—	1
Hernia	6	0·01	2	2	1	—	—	—	—	—	1
Orthopaedic	37	0·03	19	—	5	4	—	—	2	7	—
Nervous System	7	0·01	7	—	—	—	—	—	—	—	—
Rickets	—	—	—	—	—	—	—	—	—	—	—
Skin	1,928	1·80	566	814	341	29	99	—	16	25	38
Scalp	463	0·41	4	409	12	2	34	—	—	2	—
Hookworm	21,255	20·10	6,224	3,755	5,780	1,266	716	998	94	810	1,612
Malaria	926	0·84	18	—	268	14	31	345	91	133	26
Abnormal Behaviour	1	0·01	1	—	—	—	—	—	—	—	—
Mental Deficiency	3	0·01	3	—	—	—	—	—	—	—	—
Speech	15	0·01	7	—	2	6	—	—	—	—	—
Scabies	1,662	1·57	583	437	290	93	56	51	2	58	92
Podiculosis	6,219	5·90	2,505	1,021	1,497	171	134	264	15	122	490
Ringworm	111	0·15	20	10	62	16	—	—	1	1	1
Other Defects	5,189	4·90	2,224	458	545	608	22	1,197	—	25	108
Total	105,656	100	30,732	17,804	22,448	6,949	2,399	14,669	1,287	3,783	5,585

TABLE LXVI

Defects Corrected

Defects	*Total Found*	*Total Corrected*	*Percentage to Total Found*	*Western Province*	*Central Province*	*Southern Province*	*Northern Province*	*Eastern Province*	*North-Central Province*	*North-Western Province*	*Uva*	*Sabara-gamuwa*
Malnutrition	13,913	5,396	39.0	1,376	798	1,879	171	147	82	390	165	388
Uncleanliness	3,880	2,333	60.1	623	479	447	268	96	55	231	93	41
Unvaccinated	7,543	4,932	65.3	1,768	969	926	265	106	52	403	133	310
Eyes	601	169	28.1	134	—	19	12	—	2	—	—	2
Ears	169	76	44.0	24	37	7	3	1	1	—	1	2
Defective vision	848	482	56.8	369	103	10	—	—	—	—	—	—
Defective hearing	42	12	28.6	10	—	—	2	—	—	—	—	—
Enlarged Glands	299	12	4.0	3	—	6	2	—	—	—	1	—
Enlarged Spleens	83	32	38.5	—	3	—	—	—	—	9	20	—
Lymph Glands	46	2	4.3	2	—	—	—	—	—	—	—	—
Dental Carries	764	114	14.9	21	—	—	37	—	1	—	55	—
Teeth and Gums	21,116	3,793	17.9	2,651	881	—	31	9	—	42	179	—
Nose	544	368	67.8	26	341	1	—	—	—	—	—	—
Adenoids and Tonsils	4,389	1,136	25.9	140	138	126	466	54	4	42	106	60
Anaemia	13,430	7,875	58.7	1,115	792	4,088	544	299	125	489	253	170
Heart	62	12	19.3	11	—	—	1	—	—	—	—	—
Lungs	107	43	40.2	27	3	6	1	—	6	—	—	—
Hernia	—	—	—	—	—	—	—	—	—	—	—	—
Orthopaedic	37	2	5.4	—	—	1	1	—	—	—	—	—
Nervous System	—	—	—	—	—	—	—	—	—	—	—	—
Rickets	—	—	—	—	—	—	—	—	—	—	—	—
Skin	1,928	981	50.8	347	356	197	9	39	6	—	19	8
Scalp	463	152	32.8	3	113	9	—	25	—	—	—	2
Hookworm	21,255	12,472	58.6	3,920	2,014	4,558	646	661	12	489	37	135
Malaria	926	205	22.1	16	—	147	11	14	1	—	—	16
Abnormal Behaviour	—	—	—	—	—	—	—	—	—	—	—	—
Mental Deficiency	—	—	—	—	—	—	—	—	—	—	—	—
Speech	15	1	6.6	1	—	—	—	—	—	—	—	—
Scabies	1,662	732	44.0	196	159	171	83	50	2	27	44	—
Pediculosis	6,219	4,101	65.7	1,512	693	1,341	106	125	1	193	96	34
Ringworm	111	61	54.9	3	5	27	16	—	—	—	1	9
Other Defects	5,187	2,240	39.2	1,193	71	238	608	—	—	103	17	10
Total	105,656	47,734	46.3	15,491	7,955	14,204	3,283	1,626	350	2,418	1,220	1,187

Disease of Teeth and Gums

19.7 per cent. of the school children examined showed dental carries and disorders of teeth and gums. The defects together form 20.0 per cent. of the total defects found in the scholars. Compared with the previous year's figures there is a reduction in the percentage that this disease forms to the total defects.

The Mobile Dental Clinic which does itineraries carries out a number of corrections of defects of teeth and gums. This Mobile Clinic has proved to be an asset and is popular in the rural and urban areas.

The planned itineraries for the Mobile Dental Clinic could not be carried out during the year under review as the Van broke down early during the year when it was doing its work in the North-Western Province. It is hoped to arrange for this work as soon as the Van is repaired.

The Mobile Clinics can but meet only a fraction of the need in this direction and a large number of defects might remain uncorrected for want of facilities. Owing to the experience gained and the need for permanent Dental Clinics arrangements are being made to establish facilities for dental treatment in an increasing measure as Dental Surgeons and equipment become available.

In addition to the work done by the Mobile Clinic dental defects are corrected at the following Dental Clinics:—

(1) Dental Institute, Colombo.
(2) ,, Clinic, Negombo.
(3) ,, ,, Galle.
(4) ,, ,, Ambalangoda.
(5) ,, ,, Kandy.
(6) ,, ,, Jaffna.
(7) ,, ,, Batticaloa.
(8) ,, ,, Kurunegala.
(9) ,, ,, Kegalla.
(10) ,, ,, Anuradhapura.
(11) ,, ,, Mannar.
(12) ,, ,, Trincomalee.
(13) ,, ,, Panadura.
(14) ,, ,, Moratuwa.
(15) ,, ,, Badulla.
(16) ,, ,, Bandarawela.
(17) ,, ,, Nuwara Eliya.
(18) ,, ,, Chilaw.

Malnutrition

13,913 children were found to be suffering from malnutrition. Malnutrition among school children is without doubt due largely to the economic condition of the parents. The food that is essential for growth is lacking, due to the fact that parents cannot afford to give their children the right type of food they need. In the majority of cases this was the sole cause, though in a few cases, ignorance on the part of the parents regarding dietetics was a contributing cause.

The present mid-day meal in schools consists of a tea bun or a slice of bread and a cup of plain tea with sugar. Only a few schools provide a vegetable, dhall or sprat to accompany the bread.

The desirability of replacing the mid-day meal by a glass of milk has been stressed repeatedly but there are many difficulties, not the least of which is the extremely low amount of milk produced in this country. The Milk Committee appointed by the Minister of Health has drawn attention to this fact very strongly and it is likely that some concrete action will be taken in the near future to remedy the present state of affairs in regard to the availability of milk.

Pediculosis

5.7 per cent. of the children examined were found to have this defect and it formed 5.9 per cent. of the total defects. This defect is chiefly detected in girls' schools. School Health Nurses and Public Health Nurses attend to the correction of these defects. In places where they are not working, school teachers can easily take up this activity as the correction needs no technical knowledge and necessary equipment is cheap and available. This should form a practical demonstration in the Health Education Table adopted by the teachers.

Anaemia

12.5 per cent. of the children examined were found to have this defect and it formed 12.7 per cent. of the total defects. The condition is due to malaria, hookworm and general malnutrition.

Tonsils and Adenoids

This contributed 4.2 per cent. of the total defects. Correction of this defect in its advanced stages can only be done satisfactorily in well-equipped hospitals, hence only 25.9 per cent., were corrected for want of facilities in rural areas.

Uncleanliness

3.6 per cent. of the scholars examined showed this defect which formed 3.7 per cent. of the total defects. In the carrying out of routine health education procedures the teachers perform a good deal of correction of this defect.

Malaria

This condition was observed in .84 per cent. of the scholars examined. It is gratifying to note that with the spraying of D.D.T. undertaken in hyper-endemic and endemic areas, the incidence of this disease is declining.

Unvaccinated

Protection against Small-pox by vaccination was found missing in 7.0 per cent. of the children examined and this defect contributed to 7.1 per cent. of the total defects found as compared with 9.8 per cent. of the children and 5 per cent. of total defects for 1947.

Correction of Defects at School Clinics

The table below shows by provinces the number of clinics held and number of defects rectified:—

TABLE LXVII

School Clinics

Province	*Number of Clinics held*	*Number of children Treated*
Western	276	16,881
Central	228	6,897
Southern	59	1,174
Northern	131	2,107
Eastern	4	922
North-Central	—	—
North-Western	77	6,957
Sabaragamuwa	95	3,754
Uva	20	412
Total	890	39,104

Sanitation

Routine survey of sanitation in schools was carried out by the Medical Officers of Health. Of 4,072 schools inspected over 500 schools had no adequate latrine accommodation and most schools no protected water supply. For 761,031 children there were only 7,625 seats of latrines and 2,556 urinal compartments. It is hoped that with more cement being available at an economic price, latrine construction and improvements to water supplies will receive the attention of the education authorities.

The importance of providing adequate sanitary facilities for school children cannot be over stressed both for the immediate advantage gained and for the educational value they must possess.

8——J. N. A 92495 (10/49)

TABLE LXVIII—Sanitation

	Western Province	*Central Province*	*Southern Province*	*Eastern Province*	*Northern Province*	*North-Central Province*	*North-Western Province*	*Sabaragamuwa*	*Uva*	*Total*
Schools	1,230	455	682	311	314	92	586	274	128	4,072
School Children	251,032	95,910	148,487	32,951	46,144	7,064	97,895	52,003	29,547	761,031
Schools with latrines	993	313	544	103	219	37	392	274	97	2,972
Total seats	2,870	1,024	1,209	245	569	62	946	456	244	7,625
Schools with urinals	279	110	114	30	117	2	106	108	21	887
Total urinal compartments	472	379	473	142	647	2	294	117	30	2,556
Schools with covered vessels for water storage	737	149	190	64	144	43	243	177	43	1,790
Schools with individual drinking cups	318	214	384	54	176	22	288	95	63	1,614

Health Education

Health Education is the basis of all school health work, and the importance of conveying information to the children regarding matters pertaining to health through the teachers themselves is being increasingly appreciated with a view to creating a greater interest among the teachers and equipping them better for this purpose. Training classes for teachers have been established in a large number of centres year after year. During the year, 133 training classes were held and 8,456 teachers were trained as against 106 training classes and 6,322 in 1947.

TABLE LXIX—Health Education

Province	*Number of Training Classes*	
	Commenced	*Completed*
Western	60	60
Central	68	68
Southern	—	—
Northern	5	5
Eastern	—	—
North-Central	—	—
North-Western	—	—
Uva	—	—
Sabaragamuwa	—	—
Total	133	133

The following table shows the routine health Education procedures and health instructions and other activities connected with Health Education carried out in the various provinces:—

TABLE LXX—Number of Schools Carrying out Procedures

Health Education	*W. P.*	*C. P.*	*S. P.*	*N. P.*	*E. P.*	*N.-C.P.*	*N.-W.P.*	*Uva*	*Sab.*	*Total*
1. Daily morning inspection	1,065	455	583	226	106	74	429	112	382	3,432
2. Scoring of Health habit booklet	100	93	133	30	19	93	63	14	49	594
3. Weighing and measuring	495	231	311	53	27	2	208	48	163	1,538
4. Use of handkerchief	453	215	438	80	27	4	213	56	197	1,683
5. Proper storage of drinking water	737	149	190	172	64	43	243	43	160	1,801
6. Use of individual drinking cups	318	214	384	200	54	34	288	63	217	1,774
7. Pupil participation, &c.	1,008	394	507	312	106	81	6	93	267	2,775
8. Midday meals	1,146	382	616	309	205	88	514	514	360	4,131
9. Health clubs	73	83	126	76	16	1	—	—	46	424
10. Organised play	92	244	567	162	93	85	400	116	386	2,142

Control of Communicable Diseases.—Notified incidence of communicable diseases in schools by provinces is shown in the following table:—

TABLE LXXI—Communicable Diseases

Diseases	*W.P.*	*C.P.*	*S.P.*	*E.P.*	*N.P*	*N-C.P*	*N-W.P.*	*Sab.*	*Uva*	*Total*
Chicken-pox	263	253	33	14	17	5	26	190	57	858
Cholera	—	—	—	—	—	—	—	—	—	—
Diptheria	2	1	—	—	—	—	—	—	1	4
Dysentry	1	7	28	—	—	—	10	—	2	48
Typhoid	17	27	5	6	4	1	—	20	14	94
Measles	168	59	55	71	293	8	88	88	60	890
Mumps	69	112	20	6	5	1	7	108	1	329
Plague	—	—	—	—	—	—	—	—	—	—
Pthisis	1	—	—	—	—	—	—	—	—	1
Small-pox	—	—	—	—	—	—	—	2	1	3
Whooping Cough	11	9	3	—	41	—	1	—	—	65
Number of schools closed on account of Infectious Diseases	1	1	2	3	4	—	1	—	—	12

Except Diphtheria and Pthisis, the incidence of all other diseases is rather high. It can be attributed to the fact that cases have been detected which in previous years escaped detection. One of the main objects of the daily morning inspection is the detection of cases of communicable diseases and if such inspections are carried out effectively an efficient method of control will become available to the health officer.

Twelve schools were closed on account of outbreaks of Infectious Diseases.

Hookworm Treatment

2,240 schools were visited for hookworm treatment and 176,466 children were treated. Treatment for hookworm disease is being availed of in increasing numbers year after year and much of the response is due to the interest and enthusiasm displayed by the teachers in the sphere of work.

Table LXXII—Hookworm Treatment

	W.P.	*C.P.*	*S.P.*	*E.P.*	*N.P.*	*N-C.P.*	*N-W.P.*	*Sab.*	*Uva.*	*Total*
Schools	443	89	264	164	666	87	408	73	46	2240
Scholars treated	44,361	12,905	27,499	11,762	15,433	8,357	45,145	6,305	4,699	176,466

Anti-Typhoid Inoculation

With the co-operation of the school teachers this very essential measure of protecting the scholars from the disease of typhoid fever by immunisation has been done with great success.

The following table shows the number of children given the first and second inoculations by provinces for the year under review:—

Table LXXIII—Anti-Typhoid Inoculation

	W.P.	*C.P.*	*S.P.*	*E.P.*	*N.P.*	*N-C.P.*	*N-W.P.*	*Sab.*	*Uva*	*Total*
1st Dose	23,411	4,646	23,304	4,888	6,383	439	5,561	4,698	1,888	75,218
2nd Dose	18,619	4,166	11,492	4,513	5,522	330	4,734	4,291	1,563	55,230

Anti-Small Pox Vaccination

Primary vaccination is compulsory for school children, and it is a requirement which is insisted by the school authorities before admission to schools and into examinations. The following table shows the Primary and Secondary vaccination done during the year under review:—

Table LXXIV—Vaccination

	W.P.	*C.P.*	*S.P.*	*E.P.*	*N.P.*	*N-C.P*	*N-W.P.*	*Sab.*	*Uva.*	*Total*
Primary	5,424	2,195	2,530	706	850	475	171	1,520	373	14,244
Secondary	10,702	1,989	848	727	659	376	675	2,571	1,376	19,923
Total	16,126	4,184	3,378	1,433	1,509	851	846	4,091	1,749	34,167

Recommendations

1. *Personnel.*—The staff employed in this work at present is 92 Medical Officers of Health, 9 School Medical Officers, 18 District Medical Officers, 5 Woman Medical Officers, 8 School Health Nurses. This is inadequate to meet the needs of the whole Island. The question of appointing more personnel needs urgent consideration.

2. Health education in schools consists in training children in proper habits of living and providing them with the correct knowledge and attitude towards health. Emphasis is placed on practice and therefore the schools should be provided with necessary facilities for the practice of some of the health habits, such as adequate sanitary latrines, adequate sanitary urinals, protected water supply, proper storage of drinking water, proper storage and disposal of refuse. As a first step the provision of sanitary facilities which had been neglected during the war years and those succeeding them should receive more careful attention. In addition the training of school teachers, who are the best agents to enforce the practice of health habits, will receive more attention.

3. Hookworm infestation is yet a major problem. Education, treatment and provision of sanitary facilities in the schools and in the homes are vitally important.

4. Immunisation against Small-pox and Typhoid fever should be intensified.
5. The provision of a more nutritive mid-day meal should receive attention of all the authorities.

VI—MEDICO-LEGAL WORK

The Medico-Legal work in the Island is in charge of District Medical Officers of the Department in the case of most outstations—special Judicial Medical Officers however are stationed in Colombo, Kandy, Galle, Jaffna and Kurunegala.

The J. M. O., Colombo, as the acknowledged expert, is often consulted by outstation Medical Officers in complicated cases, and is also sometimes called upon by the Attorney-General's Department to proceed to outstations in special cases, sometimes after exhumation.

The staff of the J. M. O., Colombo, is as follows:—

Judicial Medical Officer.
Assistant Judicial Medical Officer.
One Clerk.
One Stenographer.
One Dressing Attendant.
One Office Orderly.
One Peon.
Two Post-Mortem Labourers.

In addition to the above, the J. M. O. has the advantage of having the assistance of the following technical staff of the University of Ceylon:—

One Technician.
One Laboratory Assistant.
Three Laboratory Attendants.
One Labourer.

Buildings.—Since no special office and laboratory have yet been provided for the J. M. O. by the Medical Department, accommodation has been made available for him in the New Pathology laboratory block of the University.

In the buildings are:—

An Office and Library of the J. M. O.
Office of the Assistant J. M. O.
Laboratory.
X'Ray Room.
Fluorescence analysis room.
Serology Room.
Museum.
and a Strong Room for storing productions in Medico-legal cases.

The J. M. O's duties consist mainly in making post-mortem examinations, occasionally after exhumations. In all 436 post-mortem examinations were made by him during the year and his reports are frequently illustrated with photographs taken by his technical staff—a procedure which is most helpful to the Judiciary especially in intricate cases of crime.

The attached laboratory enables him to report on specimens collected on post-mortem examinations, productions sent to him by various Magistrates and outstation Medical Officers; and also to make reports on the serological examination of blood and the grouping of blood stains.

During the year, 123 productions in Judicial cases were sent to the J. M. O. for examination from the Courts of Law of the Island. Of these 38 were productions of hair, sent for microscopic examination; 48 were productions for ascertaining the blood group and 37 were miscellaneous productions such as bones, human viscera, &c., sent for pathological examination. The Assistant J. M. O. examines and reports on all cases of assault and injury. Those able to walk are examined at his office where X'Ray facilities are available. Cases not able to walk are examined at the General Hospital to which they are admitted. In all 6,255 such cases were examined and reports on them furnished during the year.

During the year, Medical Officers in outstations made 1,442 post-mortem examinations, which included 448 cases of accident, 216 of suicide and 385 of homicide. 7,347 assault cases, of which 1,054 were of firearms hurt, were examined during the year. 568 other cases, including 85 of rape were also examined.

In view of the importance of medico-legal work and the need for proper facilities high priority has been given in the building programme for the construction of a new Medico-Legal Department with provision for a Coroner's Court. Unfortunately a section of the Nurses' quarters stands on the site that has been agreed upon as being best suited for this purpose. Arrangements have therefore been made to construct a new wing to the Nurses' Training School to provide the additional accommodation required for the nurses and to enable the demolition of this building. As soon as this has been done the work on the Medico-Legal Department will be undertaken.

VII—RADIOLOGY

Very special efforts had been made in recent years to improve and extend the radiological services in our Medical Institutions, but on account of circumstances associated with the war and the attendant difficulty of obtaining equipment, the scheme had to await the advent of more favourable times. The arrival of a large consignment of apparatus in 1948, however, definitely made it possible for a beginning to be made. On account of the easier supply position it is now almost certain that our plans for the future will not be unnecessarily disturbed. Some observations are made hereunder to indicate the present position and the extent to which we can meet the immediate demands of our institutions.

General Hospital, Colombo.—A new radiological block is to be provided in the coming year. The existing Out-Patients' Department building is to be utilized for this purpose after necessary alterations have been effected. Plans are ready and funds have been made available to enable the work to be proceeded with without delay. This block will provide accommodation for the Diagnostic X'Ray Department, and the Electro-Therapy, Electro-cardiography, Remedial Exercises, and Clinical Photographic Sections. Most of the necessary equipment and apparatus is available and only awaits installation.

The X'Ray Therapy and Radium Department, which is accommodated in a separate building is functioning satisfactorily. A Superficial Therapy apparatus, which was received towards the latter part of the year has been installed. An apparatus for Contact therapy, which is on order is expected soon. When this latter addition is made, this section should compare favourably with any similar departments in any other part of the world. The demand for more apparatus is, however, pressing because of the ever-increasing number of cancer patients who are recommended to have this form of treatment. A request has been made for one more Deep X'Ray Therapy Apparatus for use in the treatment of Cancer and other malignancies. When this is obtained our normal needs will be met for some years to come. It is hoped that when three other Cancer Centres at Kandy, Galle and Jaffna are opened during the course of next year, the congestion now prevailing at the General Hospital will be considerably relieved.

In the associated treatment of Cancer with Radium, it has been possible to make a substantial addition to the small quantity of Radium that was available. A consignment of Radium, being part of a quantity indented for, was received and is already in use. The balance is expected early. When the full amount is received the total quantity available for use will be about 1,600 mgs. of Radium distributed into about 540 items consisting of Tubes, Needles and Plaques.

The question of providing more Medical Assistance, skilled Technicians, and expert Technical Staff such as an X'Ray and Radium Physicist, will have to be gone into early.

To add to all these activities at the General Hospital, mention must be made of the Technical and Engineering Section which look after the installation, servicing and maintenance of all equipment in our institutions. The amount of work has already increased to such an extent, with the arrival of a large number of X'Ray apparatus and other equipment, that a case has already been made for an increase in the amount of assistance allowed, chief among them being the early appointment of an X'Ray and Electro Medical Technologist and other appropriate technical staff that will be necessary to cope with the heavy volume of work involved.

The Anti-Tuberculosis Institute, Pettah.—A new X'Ray apparatus is to be installed soon. A vertical Roentgenoscope is on order, which when it arrives and is installed will be used for routine visual examination of patients thus effecting a great saving in expensive photographic material.

The Chest Clinic, Darley Road.—This Clinic had been recently taken over by Government from the Colombo Municipality. A modern X'Ray apparatus is also available. The Mass Radiography Unit, which was received will be installed here as soon as alterations to the building are complete. It is hoped to obtain two Mobile Mass Radiography Units in the next financial year to enable an Island-wide T. B. Survey.

Civil Hospitals, Kandy, Galle, and Jaffna.—The existing X'Ray apparatus at these institutions, which have been in commission for over 14 years will be replaced by modern plants. These plants have already arrived and will be installed soon. Apparatus for X'Ray Therapy (Cancer Therapy), Electrocardiography and Electro Therapy are also on order. More X'Ray apparatus for routine X'Ray diagnosis and mobile X'Ray apparatus for ward work have been indented for each of these hospitals. A new radiological block to provide accommodation for all these requirements is to be erected for each of these hospitals. Plans are nearly ready, while financial provision to enable the structures to be completed without delay will, it is hoped, be released without difficulty. Except for the Civil Hospital, Kandy, no Radiologists are available at either Jaffna or Galle. This is a matter that should be given top priority if the Cancer Therapy Departments at these Centres are to function satisfactorily.

Civil Hospitals at Kurunegala, Badulla, Ragama Chest Hospital, and Chest Hospital, Welisara.—These hospitals have the use of low powered X'Ray apparatus at present. The need for a better type of apparatus, capable of producing more efficient results has in each case been pleaded for as urgent. The hospitals at Kurunegala, Ragama and Welisara will shorty be provided with eqpuipment similar to the ones that have been obtained for Kandy, Galle and Jaffna. It is hoped to replace in the next financial year the apparatus at Badulla with the standard model we are now obtaining for our District Hospitals.

New Departments.—It is proposed to provide the Civil Hospitals at Kankesanturai, Anuradhapura, Batticaloa, Chest Hospital, Kandana, Puttalam, Mannar, Kegalla, Ratnapura, Mental Hospital, Angoda, and a selection of other District Hospitals with X'Ray facilities before the end of the financial year 1949-50. Apparatus will become available from among those that get displaced from hospitals where new sets are to be installed, and from those that have been recently received. Every effort will be made to effect a distribution of available sets with due regard to the needs of each institution. Although ideal accommodation may not be available, temporary accommodation may be made to house the apparatus until suitable buildings are put up. Plans have been drawn up and finalized to conform to International Regulations. Funds will have to be provided to enable the proposed buildings to be erected.

New Proposals.—Certain new proposals have been made in regard to other hospitals needing facilities for X'Ray examination. Financial provision has been asked for in the Estimates for 1949-50. If these proposals are approved every endeavour will be made to obtain the equipment without delay.

General.—The centralization and control of all services from the General Hospital has so far proved a success. Attempts at standardization of buildings, equipment and apparatus have also proved successful. The ultimate object is undoubtedly to provide every Provincial and District Hospital at least with a diagnostic X'Ray department, essential requirements for Electro Therapy and other Electro-Medical accessories such as are constantly used for diagnosis. It is not possible to do this without spreading out the scheme over a number of years. There is no reason why a good part of it should not be completed within five years if the financial and technical assistance is forthcoming.

VIII—CIVIL MEDICAL STORES

One of the most important divisions of the Department of Medical and Sanitary Services is that of the Civil Medical Stores which supplies all the requirements of Medical Officers, Medical Officers of Health and the Estate Hospitals and Dispensaries. Due to a combination of factors the working of this division has been severely handicapped and has resulted in many complaints both by Departmental Officers and by members of the public.

Owing to the very heavy demands that have been made on the Civil Medical Stores it has become necessary to indent for considerably larger quantities of medical stores than before. The accommodation available for this purpose is inadequate and unsatisfactory and proposals for a new modern Medical Store with sub-stores in the provinces have not materialized yet. The absence of a permanent Superintendent in charge of the Stores has been another serious handicap to the efficient working of this institution.

Another important factor has been the delay in securing essential supplies expeditiously. Indents placed on the Crown Agents in England have frequently been delayed or executed only in part.

It was hoped that the scheme of decentralized administration would offer even a partial solution to the problem but this scheme has been laid by for the present.

Indents to the value of Rs. 2,935,762 were placed on the Crown Agents in respect of the purchase of drugs, dressing and surgical instruments, &c., in 1948. In addition to the above, expenditure was also incurred during the same year, on account of the following:—

	Rs. c.
(*a*) Local Requisitions on the Superintendent of Stores and Supplies ..	287,423 00
(*b*) Drugs, &c., purchased by institutions for paying patients and non-paying patients, &c.	114,659 50
(*c*) Purchase of Shark Liver Oil from the Director of Commerce and Industries	71,996 70
(*d*) Service Stores, Drugs and Dressings, &c.	165,943 62
The total expenditure was therefore ..	640,022 82

Requisitions.—A comparative statement for 3 years, of the number of requisitions for drugs, dressings, instruments and printed forms—Civil and Estates received at the Civil Medical Stores is given below:—

1945–46		*1946–47*		*1947–48*
23,470	..	23,950	..	29,734

The cost of drugs issued to Estates for the last 3 years is as follows:—

	Rs. c.
1946	356,836 51
1947	253,394 35
1948	266,470 47

Receipts.—Number of packages received from the Crown Agents, India and other sources outside Ceylon for a period of three years:—

1945–46		*1946–47*		*1947–48*
4,348	..	11,459	..	13,360

Despatch.—A comparative statement of the number of packages despatched from the Civil Medical Stores for a period of three years shows:—

1945–46		*1946–47*		*1947–48*
23,231	..	20,771	..	31,886

Items.—The number of items in some of the sections have shown a marked increase during the year under review as the following figures testify:—

1945–46		*1947–48*		
415	..	611	..	Section C (Drugs, &c.)
691	..	1,049	..	Section D (Instruments)

The main function of the Civil Medical Stores is to supply as far as possible the entire medical requirements of the various institutions in the Island. The efficient and expeditious carrying out of this duty entirely depends upon correct indenting, stocking, issuing and accounting. During the years preceding the war, it was not difficult to supply the normal requirements of hospitals and dispensaries. But within the last three or four years larger demands for supplies have been made by the various institutions, the number of which are on the increase.

It has not been possible to meet all these demands for reasons beyond the control of this institution. Consequently complaints of short supply were not infrequently heard. A new system of indenting based upon the actual estimates of requirements has now been decided upon and if adopted, it may be possible to reduce complaints of short supplies to a minimum in the future.

Accommodation.—The present buildings used as the Civil Medical Stores, at Francis Road, Maradana, have been condemned as unsuitable for stock and staff control several years ago. It was originally proposed to erect the new Civil Medical Stores in two stages. A set of new buildings were erected at Railway Yard, Maradana, as the first stage only to house certain sections of the Civil Medical Stores. The proposal to shift the Civil Medical Stores to this section has been given up as conditions have since considerably changed. These rooms have since been used as a warehouse section to store the large number of cases of drugs, &c., that are being received from the Crown Agents. Even then, the accommodation is found insufficient. There is a proposal to build a new Civil Medical Stores on the site adjacent to the warehouse section at the Railway Yard. The work of the Civil Medical Stores has rapidly increased and it is hoped that there will be no delay in planning out the new building to cope with modern requirements as expeditiously as possible.

Staff.—The staff of this institution at the end of September, 1948, besides the Superintendent, consisted of:—

1 Acting Assistant Superintendent.
1 Assistant Probationary Superintendent.
1 Assistant Medical Storekeeper.
30 Clerks (One in E.C.C. Gr. I, One in E.C.C. Gr. II, 17 in G.C.C. and 11 Temporary Clerks).
7 Section Storekeepers.
10 Assistant Section Storekeepers.
1 Foreman.
3 Peons, 1 messenger and 1 cycle orderly.
44 Packers.
2 permanent Tinkers and 1 temporary tinker.
16 Carpenters.
8 Watchers (daily paid).
59 Labourers, and
20 daily-paid temporary labourers.

IX—MEDICAL BUILDINGS

The increasing popularity of hospitals and the difficulties encountered in regard to building work during and after the war years has made the question of new medical buildings a question of paramount importance.

All the world over there has been competition for material and labour, and in Ceylon too various Government Departments have been vieing with one another in getting new buildings. In consequence the progress with regard to new medical buildings has not been as rapid as could have been wished for. Only one new medical institution, the Castle Street Maternity Home, has been undertaken.

The construction work of the Department has been in the nature of extensions to existing buildings, such as the new Children's Block at the Lady Ridgeway Hospital, and the construction of smaller medical institutions like Central Dispensaries, Maternity Homes and quarters for medical personnel.

The building programme of the Medical Department during the year could be classified under the following categories:—

(1) New Medical Institutions.
(2) Extensions, additions and improvements to existing institutions.
(3) Quarters for Medical Staff.
(4) Central Dispensaries.
(5) Maternity Homes.
(6) Rural Hospitals.

1. During the year the construction work on one new institution (the Castle Street Maternity Home) was commenced.

2. Additions and improvements to existing institutions were undertaken as usual and in several instances these could be considered as major undertakings, for example, new children's block at the Lady Ridgeway Hospital, new wards and quarters at Branch Hospital, Ragama, etc.

3. On account of the scarcity of houses emphasis was laid on the necessity for providing quarters for the staff and the construction of 18 new quarters was undertaken.

4. The scheme for the construction of up-to-date Central Dispensaries with Apothecary's quarters and dispensaries in separate blocks was commenced in 1946-47 and the policy was continued and 20 such Central Dispensaries were sanctioned for the year.

5. The policy with regard to Maternity Homes remained unchanged and 15 new ones were sanctioned. As this has been found to be a very popular service the question of building more of these per year is under consideration.

6. As a matter of policy the construction of any more Rural Hospitals was given up towards the end of last year. However, the work on those that had already been undertaken was continued and several were completed during the year.

Progress of work during the year.—Of the major building schemes that were started during the year the first stage of the Second Maternity Home at Castle Street, Colombo, is nearing completion. The work on the new children's ward at the Lady Ridgeway Hospital is in progress. Work on the Branch Hospital at Ragama was also commenced. The new Out-patients Department at the Jaffna Hospital is nearing completion. The Isolation Ward and the Maternity Ward for the Batticaloa Hospital have been completed except for the provision of water service and electricity. Of the 18 new quarters which were sanctioned 14 are now under construction and are expected to be completed during 1949. The construction of the other 4 is held up owing to difficulties regarding sites.

Twenty-six new Rural Hospitals and 11 new Maternity Homes were completed and opened during the year.

MAJOR SCHEMES

Scheme	*Location*	*Estimated cost* Rs.	*Remarks*
Second Maternity Home ..	Castle Street, Colombo	1,000,000 ..	Commenced in 1947. First stage nearing completion
Branch Hospital ..	Ragama ..	2,000,000 ..	Commenced in 1948. Work in progress
New Children's Ward, Lady Ridgeway Hospital	Borella, Colombo ..	750,000 ..	Work in progress
	Additions and Improvements—		
New Out-patients Department and kitchen	Jaffna Hospital ..	400,000 ..	Commenced in 1946 now almost completed
Maternity Ward and Isolation Ward	Batticaloa Hospital ..	320,000 ..	Commenced in 1946, complete except for electricity and sewerage
Quarters for Medical Officer ..	Kandana Sanatorium	28,925 ..	Commenced in 1948 now nearing completion
Quarters for Medical Officer ..	Horana Hospital ..	30,000 ..	do.
Two Quarters for Assistant Medical Officers	Ragama Chest Hospital	58,000 ..	do.
Two Quarters for Assistant Medical Officers	Welisara Chest Hospital	58,000 ..	do.
District Medical Officer's Quarters and Nurses' Quarters	Wathupitiwela Hospital	75,000 ..	Nurses' Quarters under construction D. M. O's Quarters held up owing to site difficulties
Quarters for Apothecary ..	Pussellawa Hospital ..	20,000 ..	Commenced in 1948; nearing completion
Quarters for District Medical Officer	Vavuniya ..	35,000 ..	Commenced in 1948; under construction
Quarters for District Medical Assistant and Second Apothecary	Giriulla Hospital ..	47,000 ..	Construction held up owing to site difficulty
Two Quarters for House Officers	Kurunegala Hospital	92,000 ..	Commenced in 1948; nearing completion
Woman Medical Officer's Quarters	Kalmunai Hospital ..	28,000 ..	Commenced in 1948; under construction
Quarters for Medical Officer ..	Mantivu Leprosy Hospital	55,000 ..	Construction held up owing to site difficulty
Quarters for Medical Officer of Health	Walasmulla ..	35,000 ..	Commenced in 1948; nearing completion
Quarters for Medical Officer of Health	Dehiowita ..	35,000 ..	Commenced in 1948; nearing completion
Maternity Ward ..	Buttala Hospital ..	32,703 ..	Commenced in 1948; under construction
Administration Block and Mortuary	Kandy Hospital ..	Itemised estimate not available	Completed
Kitchen ..	do. ..	do. ..	Under construction
Two Medical Officer's Quarters and two Apothecary's Quarters	Angoda Infectious Diseases Hospital	Itemised estimate not available	Completed
One Medical Officer's Quarters; one Overseer's Quarters; and one Clerk's Quarters	Angoda Mental Hospital ..	do.	Completed Completed Under construction
Apothecary's Quarters ..	Kataragama ..	21,500 ..	Completed
Central Dispensary and Apothecary's Quarters	Ambalantota ..	25,000 ..	Completed
New Infectious Diseases Hospital	Anuradhapura ..	25,000 ..	Under construction
New Isolation Ward ..	Anuradhapura Hospital	26,500 ..	Completed
District Medical Officer's Quarters and Apothecary's Quarters	Kalpitiya Hospital ..	50,000 ..	Completed
Central Dispensary and Apothecary's Quarters	Mullegama ..	30,750 ..	Completed
Maternity Ward ..	Ittapana Cottage Hospital	35,000 ..	Under construction
Six Wards ..	Eheliyagoda Hospital	120,000 ..	Completed
Maternity Ward ..	Nuwara Eliya Hospital	75,000 ..	Under construction

Maternity Homes completed and opened during the year—

Western Province	Biyagama
Central Province	Galagedera, Katugastota
Southern Province	Morawaka, Uduwilla
Northern Province	Cheddikulam
North-Western Province	Ehetuwewa, Muruthanga
North-Central Province	Horawapatana, Kebitigollewa
Sabaragamuwa	Algama

Rural Hospitals completed and opened during the year—

Western Province	Kosgama, Minuwangoda
Central Province	Hurikaduwa, Akurana, Wattegama, Panvilatenna, Uduwela
Southern Province	Borakanda, Batapola, Habaraduwa, Ambalantota, Ranna, Morawaka, Meegahajundara, Kamburupitiya
Northern Province	Silavathurai, Puthikidiiruppu
Eastern Province	Tamblegam, Gomarankadawela, Kucheveli, Eravur
North-Western Province	Hematagama, Talampitiya
North-Central Province	Horawapatana, Kekirawa
Sabaragamuwa	Gilimale

X—AMBULANCE SERVICE

The Hospital Ambulance Service was started in 1926, with two Ambulances attached to the General Hospital, Colombo. The number was increased to four in 1944. During the financial year 1945-46 one ambulance each was supplied to the Hospitals at Galle, Jaffna and Anuradhapura. During 1947-48, twelve more ambulances were supplied to other provincial and district hospitals. Twenty-five ambulances will be provided during 1948-49. The distribution of Ambulances is shown in the table below. When the full complement has been received it will be possible to establish an efficient Ambulance Service throughout the Island.

The object of the Department is to establish throughout the Island a service which, with the aid of telephone facilities, will provide quick and safe transport for the sick from their homes to the smaller Hospitals or from the latter to the larger Hospitals.

Accordingly the Hospital Ambulances will be available for the transport of the following types of cases:—

(*a*) Cases of serious illness from the smaller hospitals, Maternity Homes and Dispensaries to the Central Hospital or, subject to the approval of the Officer-in-charge, direct to the Provincial Hospital.
(*b*) Serious Maternity cases within the area served by the Ambulance to the nearest Hospital, when summoned by a Government Midwife.
(*c*) Lying-in-Mothers to their homes from medical institutions if considered necessary by the Officer-in-Charge for any special reason.
(*d*) Chronic or convalescent cases from the major to minor institutions or to special institutions intended for such cases.
(*e*) Cases of serious injury when summoned by an Officer-in-Charge of a Police Station or by a District Revenue Officer.
(*f*) Serious cases of illness when summoned by private parties, Chairmen of Local Government Bodies and Medical Practitioners.

Transport is free to patients whose monthly income is not more than Rs. 100. The hire is Rs. 10 per trip or Re. 1 per mile whichever is greater.

For the transport of cases of communicable disease one Ambulance was supplied in 1945, and placed in charge of the Divisional Medical Superintendent (Health), Colombo. Two more were added to the number in 1948.

DISTRIBUTION OF AMBULANCES

No.	*Station*	*Previous to 1947–48*	*1947–48*
1	Anuradhapura	1	—
2	Avissawella	—	1
3	Badulla	—	1
4	Batticaloa	—	1
5	Galle	1	—
6	General Hospital, Colombo	4	1
7	Jaffna	1	—
8	Kalutara	—	1
9	Kandy	—	1
10	Kegalla	—	1
11	Kurunegala	—	1
12	Matara	—	1
13	Negombo	—	1
14	Ratnapura	—	1
15	Vavuniya	—	1
	Total	7	12

XI—TRAINING, 1948

Medical Officers.—Twenty-four Medical Officers were granted study leave to obtain specialist qualifications prescribed by the Department to meet its requirements. Of these, two officers were sent for specialization in Public Health, one at Harvard University, America; and the other at Toronto University, Canada.

The following officers on study leave obtained specialist qualifications noted against their names, during the year:—

1.	Dr. S. Balasingham	M. D. (London), D. C. H. (London).
2.	Dr. W. A. Karunaratne	M. R. C. P. (Edin.), C. P. H. (Lond.)
3.	Dr. R. D. de A. Seneviratne	M. D. (London) in Pathology
4.	Dr. S. Rajanayagam	F. R. C. S. (England).
5.	Dr. K. G. B. Stork	D. B. (Manchester).
6.	Dr. A. T. S. Paul	F. R. C. S. (Edin.).
7.	Dr. D. B. Gunasekera	M. B. B. S. (London).
8.	Dr. A. Sinnatamby	F. R. C. S. (Eng.), F. R. C. S. (Edin.)
9.	Dr. V. T. H. Gunaratne	D. P. H. (London).
10.	Dr. A. E. Perera	M. R. C. O. G. (Great Britain).
11.	Dr. D. F. de S. Gunawardena	F. R. C. S. (Edin.).
12.	Dr. M. H. M. Abdul Cader	D. H. P. (London).
13.	Dr. L. D. C. Austin	F. R. C. S. (England).
14.	Dr. P. de S. Wijesekera	M. R. C. O. G. (Great Britain).
15.	Dr. J. H. Gunawardena	M. D. (London).
16.	Dr. S. S. P. de Jong de Silva	B. D. S. (Dunelm), F. D. S., R. C. S. (England).
17.	Dr. K. G. Jayasekera	F. R. C. S. (England).
18.	Dr. E. W. Jayaratnam	F. R. C. S. (Edin.).
19.	Dr. A. P. Sandrasegera	F. R. C. S. (Edin.).
20.	Dr. C. D. Silva	D. O. M. S. (England).
21.	Dr. A. H. N. Welikala	D. M. R. ; D. M. R. T., (London)
22.	Dr. C. M. Umagiliya	D. A. (London).
23.	Dr. F. A. L. Fernando	L. D. S., R. C. S., (Edin.). H. D. D. (Edin).
24.	Dr. J. R. de V. Toussaint	D. P. H. (Sydney).
25.	Dr. F. C. Spittel	D. P. H. (Sydney).
26.	Dr. R. V. L. Rudolph	D. P. H. (Liverpool).
27.	Dr. D. E. Jayatunge	D. P. H. (Liverpool).

Local Courses of Training.—Six Medical Officers in Grade II completed a year's post-licentiate Course at the University of Ceylon in June and a further batch of six officers commenced a course in July.

Five selected Departmental Medical Officers for post-licentiate study also underwent a three weeks' course of practical field demonstration supplemented by lectures and discussions at the Faculty of Medicine of the Ceylon University.

Fifteen permanent Medical Officers and four temporary Medical Officers were trained in Health Work at Kalutara during the year for a period of one month and two weeks, respectively.

Five Medical Officers were given a post graduate course for a week in Malariology at the Malaria Field Training Centre at Kurunegala.

Medical Undergraduates.—Eighty, fourth-year Medical Students from the Faculty of Medicine, Ceylon University, spent the months of April and May in residence at the Public Health Students' Hostel. This enabled the students to obtain a clear and comprehensive knowledge regarding Public Health problems confronting the Medical Profession in the country.

Tutorial Staff.—Owing to the acute shortage of tutorial staff locally, six candidates with London Matriculation qualification were selected and sent to India for the four-year B.Sc Degree Course in Nursing. Two Sisters of the Department, who were also sent to India for a nine months' Sister Tutor's Course, completed their training and were appointed as Tutors to the Pupil Nurses. The Senior Tutor attached to the Nurses' Training School, Colombo, has also undergone a similar training in India.

Masseuse.—A female candidate with London Matriculation qualification is now undergoing a three-year course of training as Masseuse in England. On completion of her training she will be attached to the Rehabilitation Centre, Colombo.

Sisters.—Six Nurses are undergoing a one year post-gradute training at the Nurses' Training School, Colombo, to qualify for promotion as Sisters. In view of this post-graduate training, for which annually about ten Nurses are selected, recruitment from abroad has ceased.

Matron.—Steps have been taken to send a Matron (Higher Grade) of the Department for the eight months' course in Nursing Administration in India.

Nurses.—226 English speaking Nurses are undergoing a three-year course of training at the Nurses' Training School, Colombo, under the guidance of two American Sister Tutors, recruited on a four-year agreement through the Rockefeller Foundation to organize both the training of Nurses and also to be in charge of the Nurses' Training School. A batch of 20 pupils are also undergoing training as Pupil Male Nurses. Their third year of training will be at the Mental Hospital, Angoda.

Swabasha Nurses.—In addition to the English speaking nurses, a scheme of training was created for candidates with the vernacular educational qualification and 223 such Swabasha Pupil Nurses are undergoing their three-year training at Colombo and Kandy. Of these, 39 have successfully completed their training and have been appointed as Nurses.

No further recruitment to this three-year scheme of training is to be made. Further recruitment of Swabasha Nurses will be to the grade of Pupil Assistant Nurses whose course of training will be for a duration of 18 months. Opportunities are to be afforded to these Assistant Nurses to qualify themselves as Nurses.

All Swabasha Nurses are given a course of lectures in Basic English conducted by Instructors of the Education Department during the period of their training.

Public Health Nurses.—There was only one training class in 1948 and this was in July. Two candidates were selected for training at the Kalutara Health Unit; one underwent a six months' course, while the other is undergoing a one and half years' course from July 1, 1948.

Midwives.—A total of 217 candidates were admitted to the training class for Midwives which consists of an 18-months' course of training, of which one year is spent at a recognised hospital, viz., De Soysa Maternity Hospital, Colombo, Kandy Hospital, Ragama Branch Hospital, Kurunegala Hospital and Inuvil

Missionary Hospital, Jaffna; and six months at a Health Unit, viz., Kalutara, Panadura, Dehiwela, Kotte, Kolonnawa and Jaffna, where they acquire experience in district work and in maternity and child welfare work.

132 have completed the Field Training satisfactorily, The selection of candidates for the post of Midwife is by a competitive examination held by the Education Department. Candidates between the ages 20 and 30 years who have passed the Junior School Examination are selected by a Board after interviews to sit for the competitive examination.

Sanitary Inspectors.—Two training classes for Sanitary Inspectors were held this year at Kalutara. The class which commenced in September, 1947, was completed in February, 1948. Of the 36 Learners who sat for the examination of the Royal Sanitary Institute held in Colombo by the Local Board of Examiners, 33 were successful and these candidates were given appointments in the Department with effect from April 1, 1948. The second training class which commenced in June, 1948, was completed in November, 1948. All the 36 learners who sat for the Final examination were successful and appointments have been offered to them in January, 1949.

Only men who have passed the Senior School Certificate (English) Examination or an equivalent examination were selected for training. A number of places were reserved for ex-servicemen who were granted the usual concession in age and qualification.

Refresher Courses to Sanitary Inspectors.—Two refresher courses for Departmental Sanitary Inspectors who have put in 10 years' service were held during the year at the Kalutara Health Unit. 56 Sanitary Inspectors attended the Course.

Two classes in Malariology, each lasting 16 days, were conducted for Sanitary Inspectors. Eleven attended the classes and 10 of them passed the examination held at the end of the course. 30 other Sanitary learners attended this course for four days

Ward Attendants.—Ninety-three males and 90 females from the August 1947 Training Class completed their course of training successfully. Due to the increased demand for trained attendants in the hospitals 150 males and 150 females were recruited to the training class in October, 1948. They will be completing their training at the end of September, 1949.

Training of Clerks Appointed to Offices of Medical Officers of Health.—Six Clerks received a week's course of training in Office Administration at the Kalutara Health Unit.

Training of other Departmental Officers.—Six Colonisation Officers of the Land Development Department were given a course of training in general public health work, with emphasis on rural health, at the Kalutara Health Unit and at the Malaria Field Training Centre at Kurunegala.

The Ceylon Medical College Council, the Chairman of which is the Director of Medical and Sanitary Services, is responsible for the training of Apothecaries, Pharmacists and Midwives.

The number of persons who qualified during the year is as follows:—

Apothecaries	47
Pharmacists	16
Midwives	178

Training of Non-Departmental Officers.—Thirty-six Voluntary women workers of the Lanka Mahila Samitiya received a ten-day field training, particularly in Maternity and Child Welfare at Kalutara Health Unit.

Visitors to the Island to see or study Health Work.—Dr. R. B. Watson, Miss Anna Mary Noll and Mrs. Colwin Piggot of the Rockefeller Foundation arrived on the 6th and left on 10th February, 1949. The purpose of the visit was for Dr. Watson to discuss Fellowship matters and for Miss Noll, who was succeeding Mrs. Colwin Piggot to be introduced to the people and to Public Health Work in Ceylon.

Dr. Ramalinga Sunderam of Travancore State spent ten days in October studying Public Health activities particularly Maternity and Child Welfare work.

Conferences.—Two conferences of Divisional Medical Superintendents (Health) and two conferences of Divisional Medical Superintendents, were held in Colombo during the year.

XII—HEALTH EDUCATION AND PUBLICITY

The Health Education and Publicity work of the Department is carried out on well-organized lines. The work can be divided into three groups—

(1) Health Education in Schools;
(2) Health Education of the adult; and
(3) Health Education of the professional worker.

The Health Education work in schools is carried out with the co-operation of the teachers and other officers of the Department of Education. To ensure a uniformity of method, the Department of Medical and Sanitary Services has evolved a scheme of Health Education procedures for all schools in the Island. There are 9 School Medical Officers and 8 School Health Nurses, specially engaged in the principal towns, while in other areas the work is done by the Medical Officer of the area with the assistance of the Sanitary Inspector and the Public Health Nurse.

Adult Health Education is carried out by means of the Press, Radio, Cinema, Public Lectures, Group Talks, Posters, Leaflets, and Health Exhibitions.

Medical Officers of Health, Sanitary Inspectors, Public Health Nurses and Midwives have their respective Associations. They hold regular meetings and annual conferences when subjects of professional interest are discussed as a means of keeping abreast of modern methods of control and prevention of diseases.

The chief feature of the Health Education work during the year under review was the 10th All Ceylon Health Week that was celebrated throughout the Island from August 15 to 21, 1948. Added interest was evinced in the celebrations by the organisation of the Central Health Exhibition at the Ananda College grounds, Maradana, during the period. This was declared open by His Excellency Sir Henry Monck-Mason Moore, Governor-General, in the presence of a large and representative gathering which included a number of foreign Diplomats as well. Exhibitions were also held throughout the Island in the areas of 87 Medical Officers of Health and 20 District Medical Officers doing Health Work.

The programme of work followed during the Week was as follows:—

Sunday, August 15	...	General Propaganda; Sermons in Churches, Mosques and Temples. Distribution of leaflets, and posters, &c.
Monday, August 16	...	Clean-up campaign.
Tuesday, August 17	...	Malaria and the Mother and Child (devoted to Maternity and Child Welfare).
Wednesday, August 18	...	Malaria and the School Child (National Savings included).
Thursday, August 19	...	Malaria and the Community, the work of the Local Authorities in promoting the Health and Welfare of the people.
Friday, August 20	...	Malaria and Agriculture—Agriculture, Food Production and Nutrition.
Saturday, August 21	...	General Celebrations, Processions, Parades, Prize-giving, &c.

Health Education as a routine measure was carried out by Medical Officers of Health, Sanitary Inspectors, Public Health Nurses and Public Health Midwives both at Clinics and during their house to house visits. The following is a summary of the work done by them:—

Lectures	*Number*	*Attendance*
With Lantern ..	239 ..	111,421
Without Lantern ..	2,547 ..	30,033
With Cinema ..	69 ..	44,486
Talks		
School Talks ..	19,833 ..	1,870,594
Village Talks ..	57,832 ..	1,146,083
Clinic Talks ..	13,296 ..	348,706

Health Vans: Health Education work was also done by the two Health Demonstration Vans in charge of two Sanitary Inspectors. These vans are fitted with exhibits on Sanitation, Malaria, Nutrition and the control of Communicable Diseases. They work according to fixed programmes in the areas of various Medical Officers of Health in the Island. Local Exhibitions and demonstrations are held and lantern lectures and group talks are given.

The two vans had visited 240 schools during 1948 and the following statement shows the work done during the period:—

	Number	*Total Attendance*
Health Exhibitions ..	240 ..	48,510
Health Talks without Lantern ..	380 ..	40,925
Health Talks with Lantern ..	126 ..	44,920
Health Demonstrations ..	333 ..	55,570
Cinema Talks	4 ..	1,750

Radio Talks: The Departmental Radio Talks were inaugurated this year with a special broadcast by the Honourable Minister for Health and Local Government on " The Health Policy of New Lanka ", followed by a talk on the " Hospital in the Nation's Health " by the Director of Medical and Sanitary Services, and on " The Preventive Services of the Nation " by the Assistant Director of Sanitary Services. These talks were put over in Sinhalese and Tamil as well.

During the All-Ceylon Health Week seven five-minute talks were put over and for the last quarter of the year; there were three talks on Tuberculosis. The total number of Radio Talks put over during the year was as follows:—

English ..	13 Talks
Sinhalese ..	13 Talks
Tamil ..	13 Talks

" Health News ": There were three issues of the " Health News " devoted to:

(1) Health and Holidays.

(2) Child Guidance.

(3) First World Health Assembly.

The talks given by the Honourable Minister, Director of Medical and Sanitary Services, and Assistant Director of Sanitary Services were issued as a special brochure under the title " Health of New Lanka ".

Films.—Arrangements have been made to obtain new Cinema films on Tuberculosis, Cancer, Malaria and Maternity and Child-welfare.

Leaflets.—Three new leaflets on " Rabies ", " Typhoid Fever " and " Manioc Poisoning " have been prepared.

Posters.—New sets of Posters on Malaria, Maternity and Child-welfare, Nutrition, Venereal Diseases, Tuberculosis and Sanitation were prepared in connection with the Central Health Exhibition and arrangements have been made to get these duplicated.

Public Health Museum.—Although several efforts were made to re-start the Public Health Museum, which had to be given up in 1942, the premises being then required to house the Division of Medical Entomology, it has not been possible to do so for the want of a suitable building. Token provision has been included in the estimates to enable the Department to start the work immediately a suitable building or building site is available.

Health Education and Publicity Work has been much handicapped for the want of suitable accommodation and personnel, as the general set up is that of 1937, while the work has expanded tremendously during the last 12 years.

XIII—FINANCE

Public Health is a purchaseable commodity and therefore the expenditure incurred by a Government on its Health Services is one of the criteria adopted universally in assessing the progress of health work in a country. Judged by this standard, Ceylon is perhaps pre-eminent among the countries of the East. During the year under review a sum of more than fifty-five million rupees from the department and other sources were spent on the Health Services, representing nearly one-tenth of the total revenue of the Island and a per capita cost of eight rupees. Compared with the expenditure of countries like India, the expenditure on the Health Services in Ceylon is relatively high. The revenue earned by the department during the year amounted to Rs. 3,313,017.

The increase in expenditure on the Health Services since 1931, when the Donoughmore Constitution, was inaugurated up to the present time will be seen from the table below. The figures represent only the expenditure from departmental votes and do not take into account the expenditure from Loan Funds, P. W. D. Votes and Treasury Votes; and is therefore an under-estimate. The full expenditure from all sources since 1944, is given in Table No. LXXVI.

Table LXXV

Year		*Amount*	*Year*		*Amount*
1931–32	..	9,805,528	1940–41	..	13,430,141
1932–33	..	9,275,559	1941–42	..	14,325,466
1933–34	..	9,442,594	1942–43	..	15,661,820
1934–35	..	11,720,362	1943–44	..	18,195,746
1935–36	..	10,951,753	1944–45	..	21,621,383
1936–37	..	11,084,912	1945–46	..	28,663,401
1937–38	..	12,079,164	1946–47	..	37,201,294
1938–39	..	12,918,695	1947–48	..	51,659,938
1939–40	..	12,929,756		..	

(EXCLUSIVE OF EXPENDITURE FROM LOAN FUNDS, P. W. D. VOTES AND TREASURY VOTES.)

It will be observed that in 1931-32, the expenditure from departmental votes was 9.8 million and the present expenditure is more than five-fold. An analysis of the items of expenditure will show that Personal Emoluments account for Rs. 19,000,000 and the Cost of Living Allowance for Rs. 10,000,000. The next largest item of expenditure is on Diets and amounted to Rs. 10,000,000. It is inevitable that the expenditure on the Health Services of Ceylon will increase from year to year and it is estimated that the departmental expenditure during 1948-49, will be 57 million rupees and in 1949-50, 66½ million rupees. In addition to the increased expenditure on buildings, personnel, diet and equipment, more money will be necessary for the intensive campaigns against Malaria, Tuberculosis, Venereal Diseases, Filariasis and Leprosy. Furthermore, the cost of medical care has increased throughout the world owing to the need for specialist services, involving the purchase of expensive equipment and the provision of skilled technical staff.

TABLE LXXVI

Comparative Statement of Expenditure from 1943/44 to 1947/48

	Item	*1943/44*	*1944/45*	*1945/46*	*1946/47*	*1947/48*
1.	Personal Emoluments	8,549,194	9,349,792	11,584,279	18,143,609	19,096,942
2.	Cost of Living Allowance	2,182,336	3,526,287	5,506,643	8,839,042	10,268,276
3.	Diets	4,455,858	6,267,273	7,579,340	8,246,512	10,168,228
4.	Drugs, Dressings, Disinfectants and Instruments	1,918,750	1,686,333	1,535,982	3,352,665	3,529,456
5.	Equipment	919,898	1,059,972	1,823,530	1,914,934	2,765,726
6.	Prevention and Control of Malaria and other Infectious Diseases	211,979	697,879	1,893,747	2,532,540	2,575,930
7.	Travelling	865,887	898,528	1,006,770	1,196,817	1,335,239
8.	Grants, including rebates payable under the Medical Wants Ordinance (Cap. 176)	417,835	465,884	521,676	627,660	489,672
9.	Transport	137,521	261,368	410,918	330,910	410,159
10.	Laundry Charges	200,863	276,531	322,541	336,874	390,152
11.	Electric Current	155,089	172,185	195,367	244,823	279,370
12.	Rent	106,927	108,361	117,755	123,251	146,491
13.	Holiday Warrants	57,325	58,465	107,526	134,985	187,162
14.	Uniforms	41,416	48,687	59,145	73,960	90,413
15.	Stationery, Office Furniture and Office Requisites	14,550	35,662	38,310	59,668	106,128
16.	Honorarium to Volunteers for Blood Transfusion	14,783	16,570	20,000	18,410	19,570
17.	Propaganda	—	—	30,720	27,989	20,478
18.	Occupational Therapy	3,624	5,067	6,893	9,276	10,986
19.	Incidental Expenses and other items	51,205	67,913	70,601	136,764	153,487
	Buildings					
1.	Construction of Rural Hospitals	228,844	316,285	1,443,423	1,642,784	1,001,647
2.	Construction of Maternity Homes	40,663	48,207	191,702	621,606	538,180
3.	Construction of Dispensaries	11,942	—	—	5,992	97,847
4.	Construction of New Hospitals	14,119	2,653	16,439	316,450	441,961
5.	Additions and Improvements to Existing Buildings	255,578	91,685	234,425	679,517	747,024
6.	Maintenance of Buildings	187,802	215,753	308,072	570,658	653,581
	Total	21,043,988	25,677,340	35,025,804	50,187,696	55,524,105

(Inclusive of expenditure from Loan Funds, P. W. D. Votes and Treasury Votes.)

Unlike the expenditure which has increased considerably since 1931/32, the revenue of the Department has remained more or less stationery round the three million mark.

The chief source of revenue has been from export duties under the Medical Wants Ordinance and amounted to Rs. 2,000,000. The second large item of income is from hospital and dispensary receipts which amounted to a million rupees.

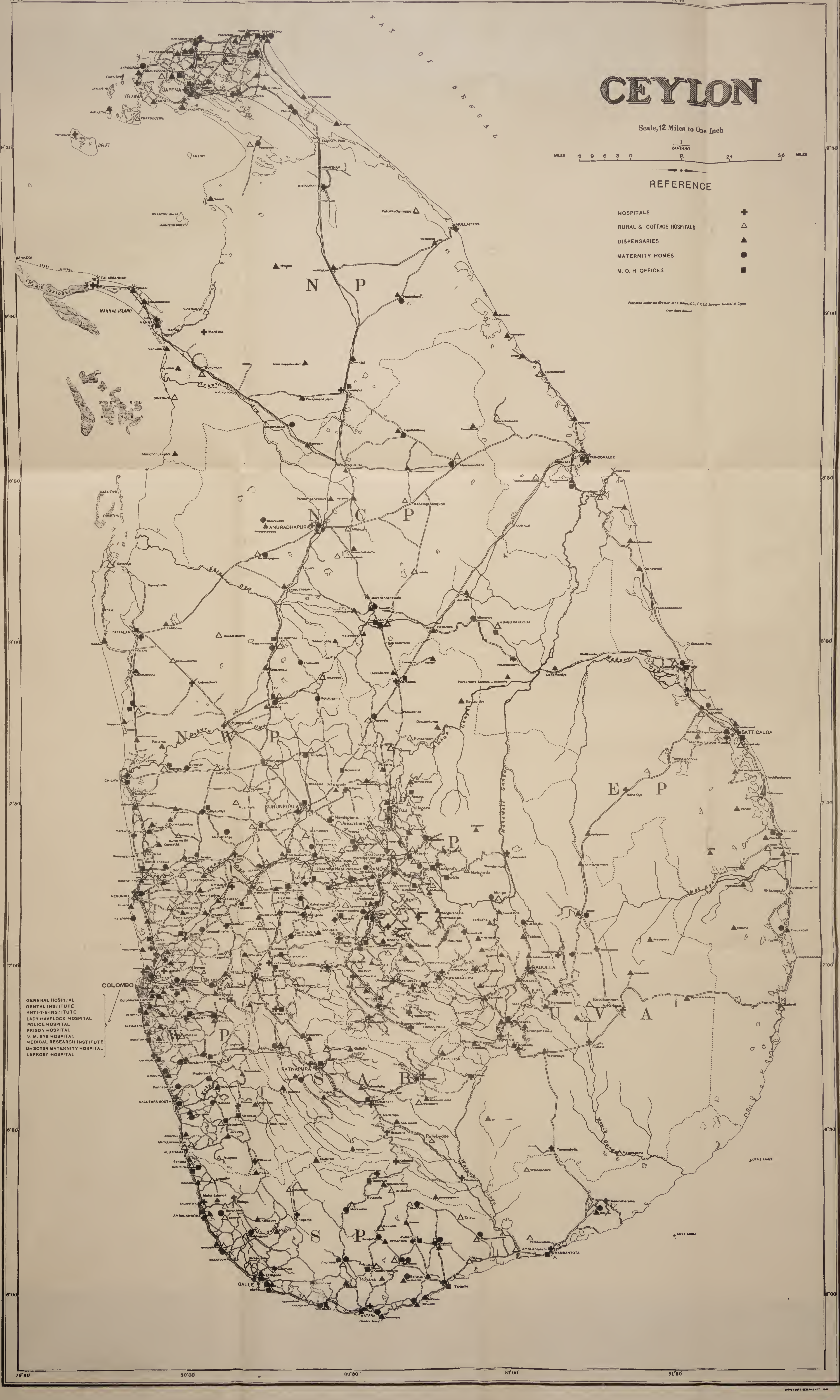
Table No. LXXVII gives the details of revenue from 1944, till the current year.

TABLE LXXVII

Comparative Statement of Revenue classified under head Medical and Sanitary Services from 1943/44 to 1947/48

Item	*1943/44* *Rs.*	*1944/45* *Rs.*	*1945/46* *Rs.*	*1946/47* *Rs.*	*1947/48* *Rs.*
1. Hospital and Dispensary receipts	778,496	916,369	1,053,699	1,002,598	1,028,725
2. Sales of drugs, &c.	53,814	101,910	221,273	57,416	36,161
3. Opium sales	51,603	51,324	47,756	46,620	44,665
4. Sales of drugs, &c., under Medical Wants Ordinance	10,470	21,035	43,618	17,685	404
5. Export duties under the Medical Wants Ordinance	2,066,451	2,004,474	2,101,451	1,805,106	2,061,552
6. Charges for maintenance and visits under the Medical Wants Ordinance	112,743	119,329	117,104	120,498	116,953
7. Bacteriological fees	13,167	16,447	24,980	47,530	10,820
8. Fees, Apothecaries, Midwives, &c.	9,435	10,282	2,573	5,223	7,652
9. Sundries	1,258	2,510	1,856	7,268	6,085
	3,097,437	3,243,680	3,614,310	3,109,944	3,313,017

Regarding the expenditure on the Health Services a frequent cause of misinformed criticism has been in regard to the relative expenditure on the curative and preventive services. While it is impossible to define accurately the expenditure on these two services, in view of the frequent over-lapping of these services in the Specialist Branches, such as in the Medical Research Institute, Tuberculosis Services, Venereal Diseases, the Leprosy Services, etc., the Accounting Branch of the Department has attempted to separate the expenditure on the two Services of the Department and has arrived at an estimate which would indicate that the expenditure on the curative services, amounted to Rs. 39,000,000 and on the preventive services to Rs. 13,000,000. This represents an expenditure of approximately 25 per cent. of the total money spent on the preventive services and 75 per cent. on the curative services.



SURVEY DEPT. CEYLON